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U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Klamath Falls Resource Area
2795 Anderson Ave., Bldg. 25
Klamath Falls, Oregon 97603

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November 1989

Draft Eligibility and Suitability Report for the Upper Klamath Wild and Scenic River Study

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

BLM–OR–PT–90–5–1792

United States Department of the Interior
Bureau of Land Management

Klamath Falls Resource Area Office
Lakeview District Office
November 1989

November 1, 1989

Dear Concerned Citizen:

Enclosed is a copy of the Draft Eligibility and Suitability Report for the Upper Klamath Wild & Scenic River Study. The study area is located in southern Oregon and northern California and involves the upper Klamath River from the John C. Boyle Dam in Oregon to the backwater of Copco Reservoir in California. The study corridor is 20.5 miles long and 0.5 to 1.5 miles wide.

The purpose of this document is to disclose the findings of the Bureau of Land Management on the qualifications of the upper Klamath River for designation as a Wild and Scenic River.

The Study Report establishes which portions of the river are *eligible* for designation, based on the criteria in the Wild and Scenic Rivers Act and indicates the highest potential *classification* of each eligible river segment. The report also analyzes the *suitability* of designating eligible river segments as components of the National Wild & Scenic Rivers System. The suitability analysis considers alternative management strategies and resulting consequences, related to public issues, resource considerations, and management opportunities.

Three alternative management strategies were formulated to protect and enhance the upper Klamath River's outstandingly remarkable values, while allowing existing land uses and activities to continue, to the extent possible. In the Current Management strategy, resource protections and existing land uses would remain essentially unchanged from the present. Current Management Intensified would be similar to Current Management, but with enhancement of resource protections and possible reductions in land uses. In the Wild and Scenic Designation strategy, maximum protection and enhancement of the natural resources would be stressed, with potential limitations on future land uses and activities. A hydroelectric development scenario was not included in this study because hydroelectric development alternatives are thoroughly analyzed in a Draft Environmental Impact Statement, prepared in July 1989 by the Federal Energy Regulatory Commission (FERC).

If you have further comments after reviewing this report, please send them to the following address, postmarked by December 31, 1989. The comment period will not be extended because of the limited time available to meet the congressional deadline for the final report. Letters postmarked after December 31, 1989 will not be considered.

Area Manager
Bureau of Land Management
Klamath Falls Resource Area
2795 Anderson Ave., Bldg. 25
Klamath Falls, OR 97603

It would be helpful if comment letters included an introductory subject line indicating "Upper Klamath Wild and Scenic River Study".

One reason for publication of this Draft Report is to ensure that we have complete, accurate information. Specific comments are better than general statements. Comments on the following subjects will be the most useful:

- Factual corrections;
- Additional information; and
- Specifics regarding river segmentation, boundaries, classification, eligibility, and suitability

This report does not addreess the proposed Salt Caves hydroelectric project. Specific comments in reference to the proposed project should be directed to FERC as they will not be addressed in this study.

Two public events have been scheduled to consider the process and conclusions presented in this report. Additional informal discussions with interested groups or individuals will be scheduled upon request.

Open House
Klamath Falls Resource Area Office
2795 Anderson Avenue, Bldg. 25
Klamath Falls, Oregon
December 6, 1989
1:00 - 5:00 PM and 7:00 - 9:00 PM

BLM Multiple Use Advisory Council Meeting
County Commissioner Hearing Room
305 Main Street
Klamath Falls, Oregon
December 7, 1989
10 AM

Public comments on the Draft Study Report will be analyzed and incorporated into a Final Report to be forwarded to Congress by April 1, 1990 for its decision on whether or not to designate the upper Klamath River. No recommendation or preferred alternative will be included in the Final Study Report.

Thank you for your past help with our river study effort. We look forward to your continuing interest and participation. For additional information or clarification, please contact Cathy Humphrey at (503) 883-6916.

Sincerely,

Judy Ellen Nelson

Judy Ellen Nelson
District Manager
Lakeview District

U.S. Department of the Interior
Bureau of Land Management
Klamath Falls Resource Area Office
Lakeview District Office
November 1989

Draft
Eligibility and Suitability Report

for the

Upper Klamath
Wild and Scenic River Study

Table of Contents

Page

EXECUTIVE SUMMARY i
ACRONYMS iii

CHAPTER 1: INTRODUCTION

INTRODUCTION 1-2
LEGISLATIVE HISTORY 1-2
ADDITION OF CALIFORNIA SEGMENT 1-5
STUDY SEGMENTS AND BOUNDARY 1-5
STUDY PROCESS 1-6
ROLES AND AUTHORITY 1-9
LAND & WATER USE ALLOCATIONS 1-9
  Klamath River Basin Compact 1-9
  Withdrawals and Reservations 1-10
  Oregon Scenic Waterways Act 1-13
  County Comprehensive Planning 1-13
EFFECT OF WILD AND SCENIC RIVER DESIGNATION ON PRIVATE LANDS 1-14

CHAPTER 2: EXISTING SITUATION

INTRODUCTION 2-2
GENERAL SETTING 2-2
  Physiography 2-2
  Land Ownership 2-2
  Existing Rights 2-2
  Socioeconomics 2-6
  Regional Transportation 2-8
  Access 2-8
LAND USES 2-11
  Energy Generation 2-11
  Recreation 2-12
  Wildlife Habitat Management 2-12
  Range Resources 2-12
  Timber Management 2-15
  Native American Traditional Use 2-19
DESCRIPTION OF RESOURCES 2-19
  Recreation 2-19
  Wildlife 2-26
  Fish 2-31
  Cultural 2-32
  Scenic 2-37
  Vegetation 2-38
  Water 2-40
  Geology 2-45

CHAPTER 3: ELIGIBILITY DETERMINATION

INTRODUCTION 3-2
FREE-FLOWING 3-2
OUTSTANDINGLY REMARKABLE VALUES 3-3
  Recreation Resources 3-3
  Wildlife 3-6
  Fish 3-8
  Prehistoric Resources 3-9

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Page

Historic Resources 3-10
Scenic Resources 3-11
Geologic Resources 3-13
Other Similar Values 3-13

CHAPTER 4: CLASSIFICATION

INTRODUCTION 4-2
CLASSIFICATION CATEGORIES 4-2
CLASSIFICATION CRITERIA 4-2
CLASSIFICATION DETERMINATION 4-2
Segment 1 4-4
Segment 2 4-4
Segment 3 4-5

CHAPTER 5: ALTERNATIVE MANAGEMENT STRATEGIES

INTRODUCTION 5-2
ISSUES AND CONCERNS 5-2
EXISTING LAND AND WATER USE PLANS 5-2
ALTERNATIVE MANAGEMENT STRATEGIES 5-4
Strategy 1, Current Management 5-5
Strategy 2, Current Management Intensified 5-5
Strategy 3, Wild and Scenic Designation 5-5

CHAPTER 6: SUITABILITY

INTRODUCTION 6-2
SYNOPSIS OF ELIGIBILITY AND CLASSIFICATION 6-2
SUMMARY COMPARISON OF ALTERNATIVE MANAGEMENT STRATEGIES 6-2
CONCLUSION 6-3

CHAPTER 7: PREPARERS, CONSULTATION, GLOSSARY AND REFERENCES

PREPARERS AND REVIEWERS 7-2
LIST OF BUSINESSES, ORGANIZATIONS, AND AGENCIES TO WHOM COPIES OF THIS DOCUMENT WERE SENT 7-3
AGENCIES AND ORGANIZATIONS CONTACTED OR CONSULTED 7-5
GLOSSARY 7-5
REFERENCES 7-9

Appendix A: RECREATION OPPORTUNITY SPECTRUM 2
Appendix B: SPECIES LIST FOR BIRDS, MAMMALS, HERPTILES 6
Appendix C: SPECIES LIST FOR FISH 10
Appendix D: PREHISTORIC SITES 11
Appendix E: SPECIES LIST FOR PLANTS 12
Appendix F: STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN REGION 9 14

MAPS

Page

Map 1-1: Upper Klamath River 1-3
Map 1-2: Wild and Scenic River Study Area 1-7
Map 1-3: Power Withdrawals 1-11
Map 2-1: Land Ownership 2-3
Map 2-2: Regional Transportation and Major Population Centers 2-7
Map 2-3: Access Roads and Recreation Sites 2-9
Map 2-4: Grazing Allotments and Wild Horse Management Area 2-13
Map 2-5: Commercial Forest Lands 2-17
Map 2-6: Critical Deer Winter Range and Falcon Habitat 2-29
Map 2-7: Historic Sites 2-35

TABLES

Table 1-1: Federal Power Withdrawals in the Upper Klamath River Study Area 1-10
Table 2-1: Upper Klamath River Study Area Land Ownership 2-5
Table 2-2: Upper Klamath River Study Area Rights-of-Way 2-6
Table 2-3: Grazing Leases and Season of Use Within the Study Area 2-15
Table 2-4: BLM-Administered High Intensity Timber Management Landfs Within the Klamath River Canyon 2-16
Table 2-5: Regional Whitewater Boating Rivers in Oregon and Northern California 2-20
Table 2-6: Whitewater Classification on the Upper Klamath River 2-23
Table 2-7: Upper Klamath River Use Statistics for Whitewater Rafting 2-24
Table 2-8: Mean Discharges and Percent Annual Runoff, Klamath River 2-41
Table 2-9: Mean and Range Values for Observed Water Quality Parameters, Mainstem Klamath River 2-43
Table 2-10: Klamath River Water Quality Parameters (Median Values) During Critical Critical Period, June-October, 1977-1987 2-44
Table 3-1: Summary of Outstandingly Remarkable Resources in the Upper Klamath River Study Area 3-4
Table 3-2: Threatened, Endangered, and State Sensitive Fish and Wildlife Found Within the Study Area and Those Potentially Within or Near the Study Area 3-7
Table 4-1: Classification Criteria for Wild, Scenic, and Recreational Rivers 4-3
Table 4-2: Upper Klamath River Classification Summary 4-6
Table 5-1: Existing Designations on the Upper Klamath River 5-2
Table 5-2: Alternative Management Strategies for Wild and Scenic Values 5-6
Table 5-3: Impacts of Management Strategies 5-8

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Executive Summary

This draft study report evaluates the eligibility, classification, and suitability of the upper Klamath River in southern Oregon and northern California for designation as a component of the National Wild & Scenic Rivers System, established in 1968 by the Wild & Scenic Rivers Act. It has been determined that segment 1 from the J.C. Boyle Dam to the powerhouse is ineligible and all of segments 2 and 3 are both eligible and suitable for designation with a "scenic" classification. The determinations and conclusions in this report were based on an evaluation of the natural values in the area.

Concurrently with this study process, the Federal Energy Regulatory Commission (FERC) is considering a license application submitted by the City of Klamath Falls for development of the Salt Caves Hydroelectric Project on the upper Klamath River. The Bureau of Land Management (BLM) study does not evaluate the Salt Caves proposal or the economic feasibility or effects associated with it. Those analyses have been included by the FERC in their Draft Environmental Impact Statement.

The study portion of the river was divided into three segments. Segment 1 begins just below the J.C. Boyle Dam at river mile (RM) 224.5 and ends 0.8 mile below the J.C.+Boyle Powerhouse at RM 219.5. Segment 2 begins at RM 219.5 and ends at the Oregon-California state line at RM 209.3. In June 1989, it was decided that a 5.3-mile segment in California (from the state line to the slackwater of Copco Reservoir at RM 204), would be included in the study as segment 3. When Congress considers the upper Klamath River for designation, segment 3 may either be included in the decision or postponed and carried through the Bureau of Land Management's resource management planning (RMP) process in the Redding, California BLM office. Likewise, if a determination is not made on the portion of the river in Oregon, it too will be carried through the RMP process in the Klamath Falls, Oregon BLM office.

Segment 1 was determined to be ineligible from the J.C. Boyle dam to the powerhouse and segments 2 and 3 eligible for inclusion in the national system. Because of the significant modification of the waterway and major continuous diversion in most of segment 1, it does not meet the definition of "free-flowing", and therefore does not meet the eligibility criteria. The 0.8 mile of segment 1 below the powerhouse (RM 218.7 to 219.5) does meet the definition and could be included with segment 2 if the river is designated. Although water flows in segments 2 and 3 fluctuate daily and seasonally, the original river volume returns to the river bed, so it fits the "free-flowing" definition. Recreational, fish and wildlife, historic, prehistoric, and scenic resource values are considered outstandingly remarkable in segment 2. In segment 3, the outstandingly remarkable values are recreational, fish and wildlife, historic, and scenic resources.

Both segments 2 and 3 meet or exceed the criteria for a scenic classification, but do not meet the criteria for wild classification.

Three alternative strategies for management of the wild & scenic values in the Klamath River Canyon were developed and the potential consequences of the strategies were analyzed. Under all management strategies, new land uses, activities, and developments within the Klamath Scenic Waterway would be reviewed by the Oregon Transportation Commission prior to commencement of the proposed action.

Strategy 1, a continuation of existing management, would only assure relatively short-term protection of outstandingly remarkable and significant values and would allow the greatest amount of land uses, activities, and developments. Strategy 2, a continuation of existing management with additional administrative protections would provide more assured, but not necessarily longer term, protection to outstandingly remarkable and significant values, than continuation of existing management. Certain land uses, activities, and developments could be diminished under strategy 2. Strategy 3 would consist of Congressional designation of eligible river segments and would provide long-term protection of resource values under the authority of the Wild and Scenic Rivers Act of 1968. Under this strategy, a wide range of management opportunities, which would be defined during formulation of a management plan, would be available. Cooperative agreements, easements, land exchanges, and jurisdictional transfers would be sought by BLM to facilitate consistent resource management on public and private land. Strategy 3 would be the most costly; would provide the best long-term protection of resources—on a larger, more contiguous area in the canyon; and would have the greatest impact on many new, and some existing, land uses, activities, and developments.

Based on the analysis of management strategies and consequences, it was concluded that segments 2 and 3 of the upper Klamath River are eligible and suitable for inclusion in, and manageable under, the National Wild & Scenic Rivers System. There are other alternatives that would protect the outstandingly remarkable values in the Klamath River Canyon; however, because these protections result from administrative designations, they are subject to be enhanced, diminished, or revoked through the BLM land use planning process or other legal authorities.

Judy Ellen Nelson
November 1, 1989

Judy Ellen Nelson
District Manager
BLM, Lakeview District

Date

ACRONYMS

ACEC	Area of Critical Environmental Concern
AUM	Animal Unit Month
BLM	Bureau of Land Management
BOD	Biochemical Oxygen Demand
cfs	Cubic Feet per Second
DEQ	Department of Environmental Quality
EIS	Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
MFP	Management Framework Plan
MMBF	Million Board Feet
NWSRS	National Wild and Scenic Rivers System
O&C	Oregon and California Act of 1937. (Revested Oregon and California O&C Railroad and Reconveyed Coos B ay Wagon Road Grant Lands).
ODFW	Oregon Department of Fish and Wildlife
PP&L	Pacific Power and Light Company
RM	River Mile
RMP	Resource Management Plan
RRA	Redding Resource Area
SRMA	Special Recreation Management Area
T&E	Threatened, Endangered, and/or State Sensitive
TMDL	Total Maximum Daily Load
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
VUD	Visitor Use Day
WHMA	Wild Horse Management Area

Chapter 1—Introduction

Introduction

The Klamath River begins in Lake Ewauna, just south of the city of Klamath Falls, Oregon (map 1-1). It flows southwesterly into California and then west to the Pacific Ocean. From the river's beginning to Copco Lake in California, it is known as the upper Klamath River. From Copco Lake to the Pacific Ocean, it is the lower Klamath River. The purpose of this eligibility and suitability study is to determine if the upper Klamath River is eligible for inclusion in the National Wild and Scenic Rivers System (NWSRS) and if so, to determine if it is suitable for inclusion, based on the criteria set forth in the Wild and Scenic Rivers Act of 1968.

Chapter 1 discusses the background and schedule of the upper Klamath River, study boundary (including the addition of the California segment), study process, roles and authorities in the designation process, and applicable laws and regulations. The remainder of this report describes the existing situation, including a description of land uses and resources; eligibility; classification (wild, scenic, or recreational); assessment of alternative management strategies and their consequences; and suitability with conclusions.

The purpose of the Wild and Scenic Rivers Act of 1968 (Public Law 90-452, October 2, 1968), as stated in section 1(b), is:

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

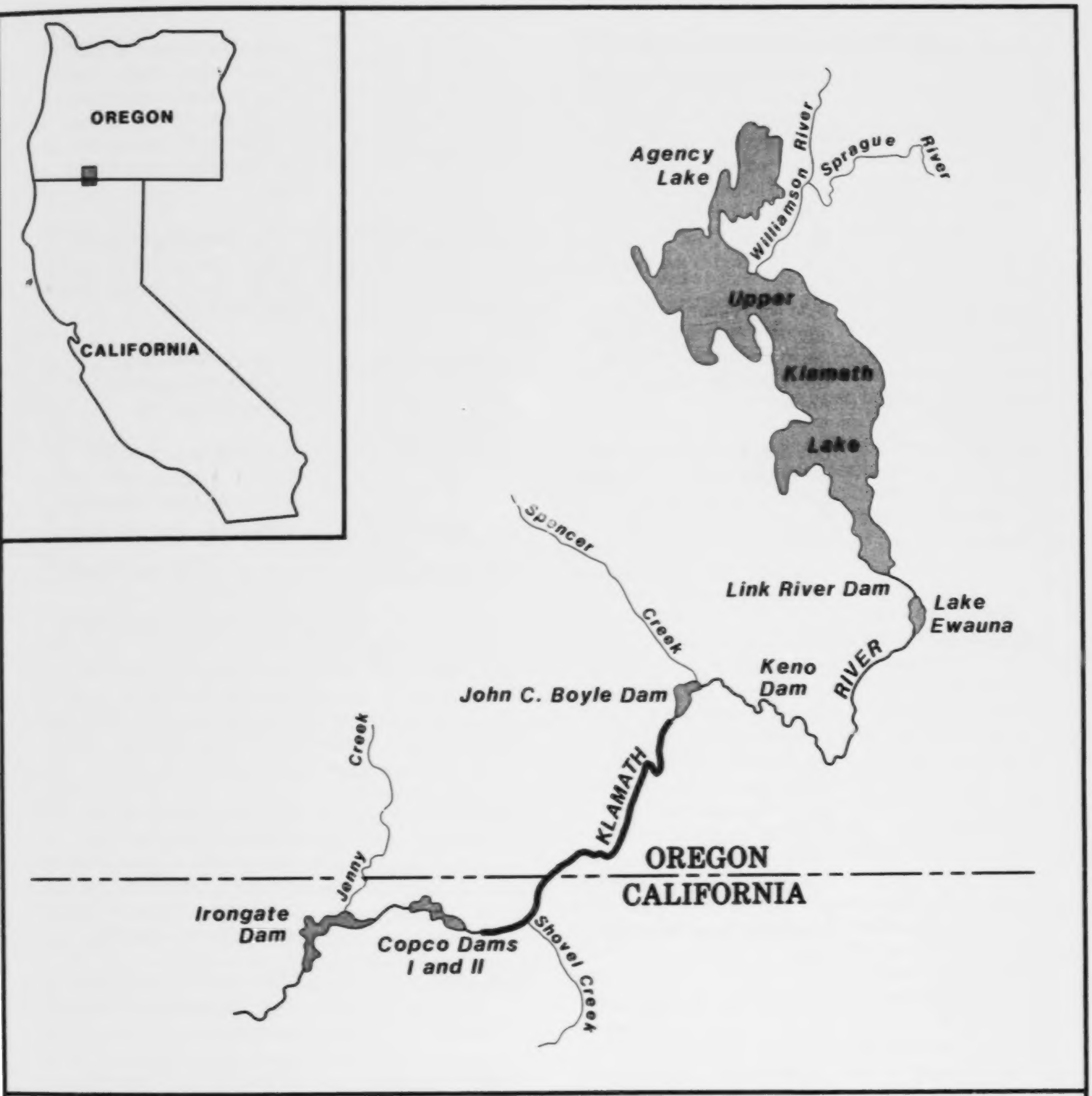
This study report on the upper Klamath River was prepared in accordance with section 5(d) of the Wild and Scenic Rivers Act of 1968, which was amended by section 104 of the Omnibus Oregon Wild and Scenic Rivers Act of 1988 (P.L. 100-557, October 28, 1988):

> UPPER KLAMATH, OREGON.—The Congress finds that the Secretary of the Interior, in preparing the Nationwide Rivers Inventory as a specific study for possible additions to the National Wild and Scenic Rivers System, identified the upper Klamath River from below the John C. Boyle Dam to the Oregon-California state line. The Secretary, acting through the Bureau of Land Management, is authorized under this subsection to complete a study of the eligibility and suitability of such segment for potential addition to the National Wild and Scenic Rivers System. Such study shall be completed, and a report containing the results of the study shall be submitted to Congress by April 1, 1990. Nothing in this paragraph shall affect the authority or responsibilities of any other Federal agency with respect to activities or actions on this segment and its immediate environment.

Background and Schedule

Several events have occurred that have affected and continue to affect management of the upper Klamath River. They include:

August 1937	Oregon & California Sustained Yield Act effective.
September 1957	Klamath River Basin Compact effective.
October 1968	Wild and Scenic Rivers Act effective.
December 1969	Oregon State Scenic Waterways Act effective (an Oregon law enacting a state protection program for certain rivers throughout Oregon).
October 1976	Federal Land Policy and Management Act effective (establishing public land policy, and providing for the management, protection, development, and enhancement of public lands).
September 1980	Jackson-Klamath Management Framework Plan completed by the Medford District Bureau of Land Management (BLM) office.


OREGON
CALIFORNIA
Agency Lake
Williamson River
Sprague River
Upper Klamath Lake
Link River Dam
Lake Ewauna
Spencer Creek
Keno Dam
KLAMATH RIVER
John C. Boyle Dam
Jenny Creek
OREGON
CALIFORNIA
Irongate Dam
Copco Dams I and II
Shovel Creek

MAP 1-1

UPPER KLAMATH RIVER

1989

N
5 0 5 10 Miles

January 1982	Nationwide Rivers Inventory, a listing of the Nation's significant free-flowing streams, completed by the National Park Service. The Klamath River, from the southern project boundary of J.C. Boyle Dam downstream to the head of Copco Reservoir, was included in the inventory.
March 1983	BLM Recreation Area Management Plan approved for the Klamath River Special Recreation Management Area.
July 1986	City of Klamath Falls submitted an application for license to the Federal Energy Regulatory Commission (FERC) to build the proposed "low dam" Salt Caves Hydroelectric Project No. 10199.
August 1988	Northwest Power Planning Council adopted a proposal to designate 44,000 miles of Northwest streams as "protected areas" because of their importance as critical fish and wildlife habitat. The upper Klamath River from Spencer Creek (River Mile (RM) 227.5) to the Oregon-California border (RM 209.2) was included as a Category F "protected area" (resident fish only).
October 1988	Omnibus Oregon Wild and Scenic Rivers Act effective requiring Department of Interior to study the eligibility and suitability of the upper Klamath River by April 1, 1990 for inclusion into the National Wild and Scenic Rivers System.
November 1988	Ballot Measure 7 passed by majority vote, amending the Oregon State Scenic Waterways Act. Four existing scenic waterways were expanded and seven new scenic waterways were added, including the addition of the Klamath River, from the J.C. Boyle Dam Powerhouse downstream to the Oregon-California border, as the Klamath Scenic Waterway.
November 1988	FERC published Notice of Intent to prepare Salt Caves Project Environmental Impact Statement (EIS).
December 1988	FERC held two public scoping meetings for Salt Caves Project EIS.
January 1989	BLM published Notice of Intent to prepare RMP and EIS for Redding Resource Area.
February 1989	BLM held open house to solicit public input on the Upper Klamath River Study.
May 1989	BLM published Notice of Intent to prepare resource management plan (RMP) and EIS for Klamath Falls Resource Area.
July 1989	BLM (Klamath Falls and Redding Resource Area offices) held a public meeting in Copco, California to solicit public input on the addition of the California segment.
July 1989	FERC Salt Caves Project Draft EIS available for public comment.
November 1989	BLM Draft Eligibility and Suitability Report for the Upper Klamath Wild and Scenic River Study available for public comment.

Projected Key Dates

January 1990	FERC Final Salt Caves Project EIS available to the public.

March 1990	BLM Final Eligibility and Suitability Report for the Upper Klamath Wild and Scenic River Study and FERC Final Salt Caves Project EIS submitted to Congress.
March 1990	BLM Final Eligibility and Suitability Report for the Upper Klamath Wild and Scenic River Study available to the public.
June 1991	BLM Redding RMP completed.
Fall 1991	BLM Klamath Falls RMP completed.

Addition of the California Segment

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 requires the BLM to study the upper Klamath River from below the John C. Boyle Dam to the Oregon-California border. The scope of this study, however, was later expanded to include an assessment of the segment of river from the Oregon-California border to the slackwater of Copco Reservoir in California (RM 204). This was done for the following reasons: 1) public comments stated that the river's resource values do not stop at the border but rather continue to Copco Reservoir; 2) the segment of the upper Klamath River that is listed in the National Park Service's Nationwide Rivers Inventory (a list of potential wild, scenic, or recreational rivers published in 1982) includes the California segment; and 3) the BLM in Redding, California is in the preliminary stages of completing an RMP, and consideration must be given to potential national wild, scenic, and recreational river areas (section 5(d) of the Wild and Scenic Rivers Act of 1968) during the RMP process. In order to avoid duplication of effort, it was agreed that the BLM in Klamath Falls would include the California segment in its study of the upper Klamath River, and this study would be used as appropriate in the BLM Redding RMP.

Congress will make the determination on whether or not river segments are to be included in the NWSRS. The determination on the California segment may either be made with the rest of the upper Klamath River or as part of the Redding RMP process.

Study Segments and Boundary

The study area has been divided into three segments (map 1-2). Segment 1 is the 5-mile section from the J.C. Boyle Dam (RM 224.5) to 0.8 mile below the J.C. Boyle Powerhouse (RM 219.5). Segment 2 is the 10.2-mile section from RM 219.5 to the Oregon-California state line (RM 209.3). Segment 3 is the 5.3-mile section from the state line to the slackwater of Copco Reservoir in California (RM 204). River miles are shown in map 2-1. These segments could be further subdivided by BLM during the management plan process or by Congress. The boundary between segments 1 and 2 was selected because of notable change in the physical characteristics of the river canyon at about that point. The boundary between segments 2 and 3 was selected because that line divides Oregon from California and BLM's Klamath Falls Resource Area from the Redding Resource Area, and the physical landscape changes at about that point.

The boundaries of any river proposed for potential addition to the NWSRS, as specified in section 4(d) of the Wild and Scenic Rivers Act, are generally, but not specifically, limited to that area measured within 1/4-mile of the ordinary high water mark on each side of the river. The September 7, 1982 Federal Register (47 FR 39456) further specifies that adjacent river areas beyond 1/4-mile from each bank may be studied if their inclusion would facilitate management of the resources of the river area. The river-related resources were assessed both within 1/4-mile of the ordinary high water mark and within the entire canyon from rim-to-rim. Based on these assessments, it was decided that the study area for segments 1 and 2 would include either the rim-to-rim or 1/4-mile boundary, whichever is larger, to effectively protect all river-related resources in the canyon's ecosystem.

The boundary in the California segment is 1/4-mile from the ordinary high water mark for the following reasons: 1) the river-related resources would be adequately protected with the 1/4-mile boundary; 2) the canyon widens in California so the rim does not make a suitable boundary; and 3) the BLM has limited authority on private land and most of the land beyond 1/4-mile is privately owned.

The study area encompasses approximately 7,980 acres in Oregon and 1,810 acres in California, of which approximately 5,950 and 200 acres are BLM-administered, respectively.

The canyon opens up in the California segment.

Study Process

This eligibility and suitability study on the upper Klamath River was initiated by passage of the Omnibus Oregon Wild and Scenic Rivers Act of 1988. The first step after the Act was passed was inventory and data collection. Because of the limited amount of time allotted for the study and the large amount of data available, this phase predominantly consisted of gathering existing data. Two cultural inventory contracts—one on the ethnology of the area and the other on the archaeology of the area—were completed by consultants for the BLM.

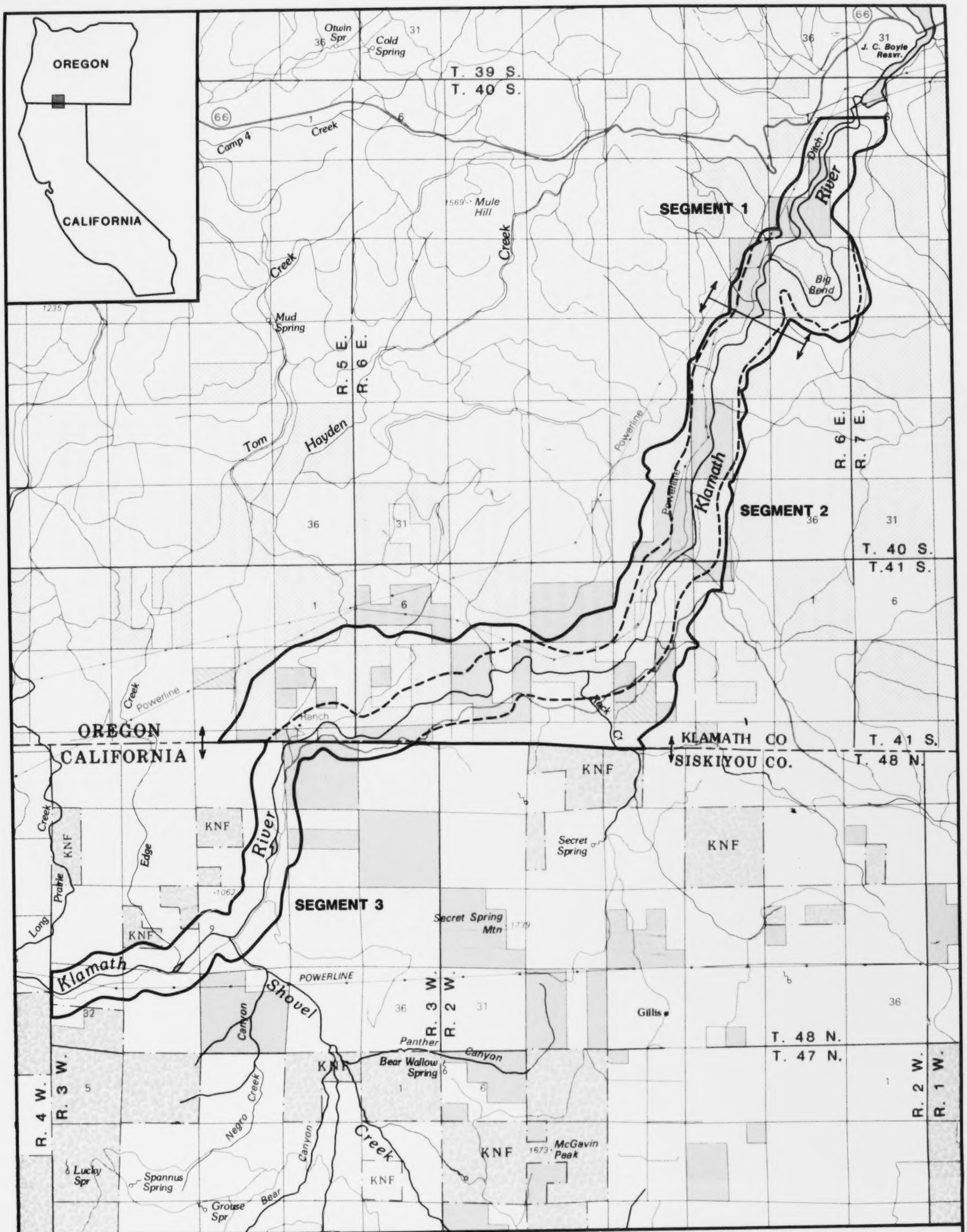
The next step involved scoping and was the first phase of public involvement. Open-house style public meetings with associated comment periods and smaller-scale meetings with various interest groups and government agencies were held to identify additional data bases and public concerns and issues. The addition of segment 3 (the California section) occurred in this phase.

The third step was to determine the eligibility of the upper Klamath River using the criteria listed in the Wild and Scenic Rivers Act and the standards for outstandingly remarkable values listed in BLM Instruction Memorandum (OR-89-632). The BLM standards were developed for use throughout western Oregon in its land use planning process.

The fourth step was to segment the river into appropriate units and to determine the classification of these segments, again using the criteria in the Wild and Scenic Rivers Act.

The fifth step of the process involved developing alternative management strategies and analyzing their consequences.

The sixth step was to determine whether or not the upper Klamath River would be suitable for inclusion in the NWSRS. The suitability determination was based primarily on the analyses completed in the previous steps. The consultants' cultural reports were reviewed by BLM staff specialists at the District and


OREGON
CALIFORNIA
SEGMENT 1
SEGMENT 2
SEGMENT 3
Klamath River
Big Bend
Ditch
J. C. Boyle Resvr.
Otwin Spr
Cold Spring
Camp 4 Creek
Mule Hill
Mud Spring
Tom Hayden Creek
Powerline
Ranch
Rock C.
KLAMATH CO
SISKIYOU CO.
KNF
Secret Spring
Secret Spring Mtn
Gillis
POWERLINE
Shovel Creek
Canyon
Panther Canyon
Bear Wallow Spring
McGavin Peak
Negro Creek
Bear Canyon
Grouse Spr
Spannus Spring
Lucky Spr
Long Prairie Creek
Edge Creek
T. 39 S.
T. 40 S.
T. 41 S.
T. 48 N.
T. 47 N.
R. 5 E.
R. 6 E.
R. 7 E.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
66

LEGEND

—— Study Area Boundary

- - - - Minimum Study Area Boundary (1/4 Mile)

N

MAP 1-2

UPPER KLAMATH RIVER

WILD AND SCENIC RIVER STUDY AREA

1989

1 0 1 2 3 Miles

State Office level for accuracy and objectivity. Appropriate sections of the reports were incorporated into the BLM study.

The seventh step involved publication of this draft eligibility and suitability report with subsequent peer and public review and comment.

The final step will include revision of the study report based on public comment, submission of the final eligibility and suitability report to Congress for its consideration of designation or non-designation of the upper Klamath River, and publication and distribution of the final report to the public.

Roles and Authorities in Designation Process

The role of the BLM in this process is to determine a potential management boundary, the eligibility and suitability of the upper Klamath River as an addition to the NWSRS and the highest potential classification; and to prepare a report with the results of these determinations for Congress through the Secretary of the Interior. Congress has the authority to designate the river as a component of the NWSRS.

Under section 2(a)(ii) the State(s) can also request designation of the river, by the Secretary of the Interior, in accordance with the following criteria:

> 1) The Legislature of the State(s), in which the river flows, must pass an Act and the Governor(s) must submit to the Secretary of the Interior an application for acceptance of the river into the NWSRS.
>
> 2) The Secretary of the Interor must determine that the river meets the criteria established in the Wild and Scenic Rivers Act.
>
> 3) The State(s) must agree to administer the river as wild, scenic, or recreational with no additional expense to the Federal Government.

The Secretary of the Interior then has the authority to make the designation.

If a decision is not made by Congress on any eligible portion of the river based on this study, the BLM will develop appropriate recommendations for Congress during its land use planning process. Consideration of potential wild, scenic, or recreational rivers is required under section 5(d) of the Wild and Scenic Rivers Act.

Applicable Laws and Regulations

If the upper Klamath River is designated by Congress as a wild, scenic, or recreational river, determinations and decisions may have to be made on whether and how the new designation(s) will affect existing resource management and allocations. Some of these key laws and regulations are briefly described in this section. The specific relationships between current laws and regulations and the effect of designation on them are not addressed in this study.

Klamath River Basin Compact

The Klamath River Basin Compact became effective in 1957. The major purposes of the Klamath River Basin Compact, as stated in Article I, are:

> A. To facilitate and promote the orderly, integrated and comprehensive development, use, conservation and control thereof for various purposes, including, among others: the use of water for domestic purposes; the development of lands by irrigation and other means; the protection and enhancement of fish, wildlife, and recreational resources; the use of water for industrial purposes and hydroelectric power production; and the use and control of water for navigation and flood prevention.
>
> B. To further intergovernmental cooperation and comity with respect to these resources and programs for their use and development and to remove causes of present and future controversies by providing (1) for equitable distribution and use of water among the two states and the Federal Government, (2) for preferential rights to the use of water after the effective date of this compact for the anticipated ultimate requirements for domestic and irrigation purposes in the upper Klamath River Basin in Oregon and California, and (3) for prescribed relationships between beneficial uses of water as a practicable means of accomplishing such distribution and use.

Section 13(e) of the Wild and Scenic Rivers Act addresses interstate compacts:

> Nothing contained in this Act shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with any interstate compact made by any States which contain any portion of the national wild and scenic rivers system.

Withdrawals and Reservations

Withdrawals are areas of federal land that are withheld from settlement, sale, mineral location, or entry under some or all of the general land laws. Their purpose is to limit activities under those laws to maintain other public values in the area or reserve the area for a particular public purpose or program.

A reservation, as defined in section 3(2) of the Federal Power Act of June 10, 1920, as amended (16 U.S.C. 796), is similar to a withdrawal. Reservations are lands and interests in lands owned by the United States that are withdrawn, reserved, or withheld from private appropriation and disposal under the public-land laws; also lands and interests in lands acquired and held for any public purpose. Lands specified in the Oregon and California Sustained Yield Act of 1937 are considered reservations.

Federal Water Power Withdrawals. Federal power project withdrawals are established under the authority of the Federal Power Act. Such withdrawals are automatically created upon the filing of an application for hydroelectric power development with the Federal Energy Regulatory Commission (commission), formerly the Federal Power Commission. Section 24 of The Federal Power Act states:

> That any lands of the United States included in any proposed project under the provisions of this Act shall from the date of filing of application therefor be reserved from entry, location, or other disposal under the laws of the United States until otherwise directed by the commission or by Congress. * * * Whenever the commission shall determine that the value of any lands of the United States so applied for, or heretofore or hereafter reserved or classified as power sites, will not be injured or destroyed for the purposes of power development by location, entry, or selection under the public-land laws, the Secretary of the Interior, upon notice of such determination, shall declare such lands open to location, entry, or selection, subject to and with a reservation of the right of the United States or its permittees or licensees to enter upon, occupy, and use any part or all of said lands necessary, in the judgment of the commission, for the purposes of this Act, which right shall be expressly reserved in every patent issued for such lands; and no claim or right to compensation shall accrue from the occupation or use of any of said lands for said purposes.

Federal water power withdrawals do not necessarily preclude designation of a river to the NWSRS. For instance, the Kings River in California, added to the NWSRS in 1987, is totally under federal power withdrawals.

Several power withdrawals in the study area overlap (map 1-3). These withdrawals and their acreages are listed in table 1-1. No withdrawals, other than for power, are known to exist within the study area boundaries.

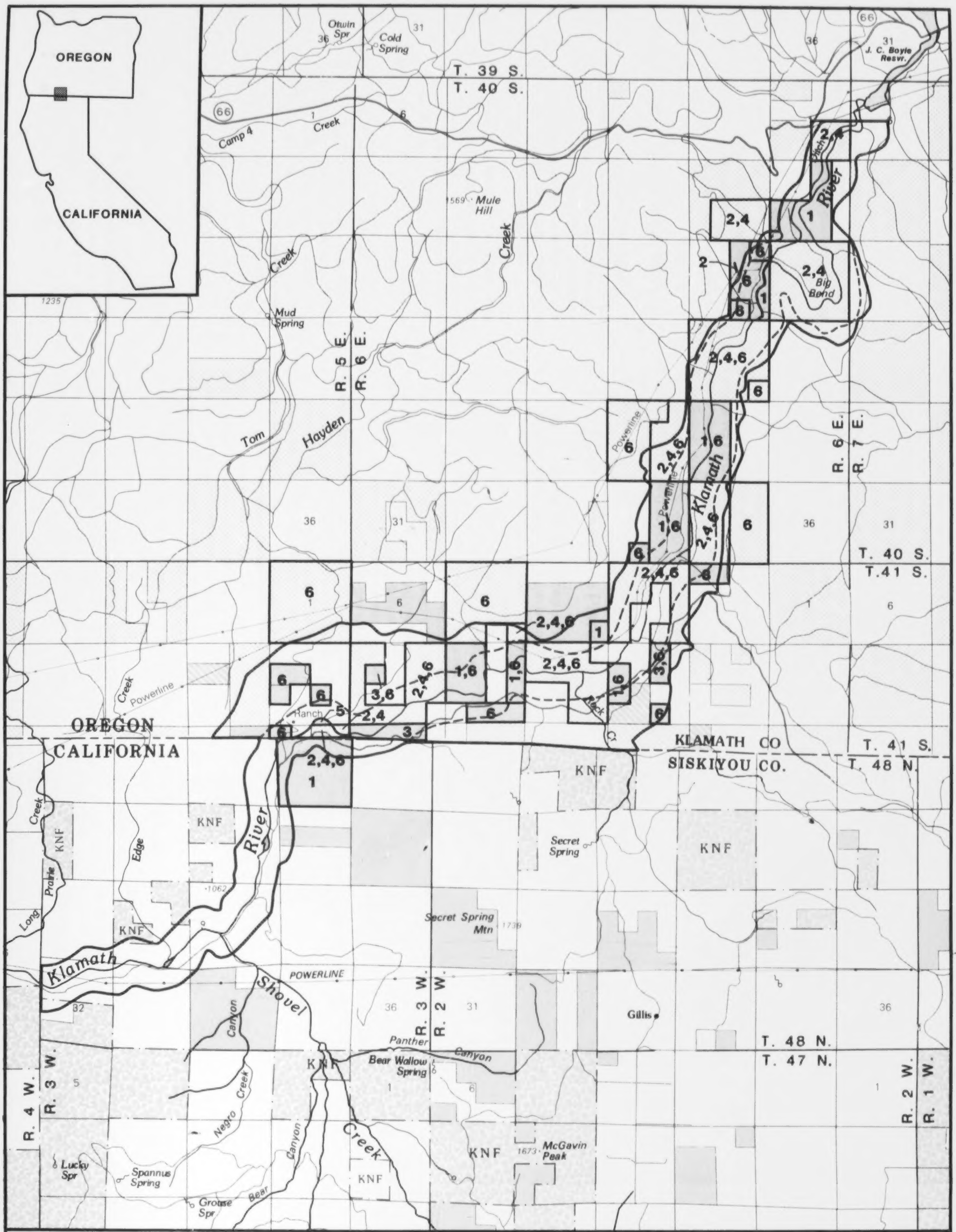
Oregon and California Lands. In 1866, Congress granted all odd numbered sections in a 40-mile strip west of the Cascade Range—from Portland to the California border—to the Oregon and California Railroad Company (3.73 million acres), intending that they dispose of the grant lands to speed settlement of the West. In 1916, Congress revested the "Oregon and California" (O&C) lands to the Federal Government (2.89 million acres) and in 1937 the O&C Sustained Yield Act was passed, placing these lands under permanent forest management on a sustained yield basis.

The O&C Sustained Yield Act, 43 U.S.C. 1181a, states:

> Notwithstanding prior acts, the O&C lands which have heretofore or may hereafter be classified as timberlands, and power-site lands valuable for timber, shall be managed, except as provided in section 1181c of this title, for permanent

Table 1-1. Federal Power Withdrawals in the Upper Klamath River Study Area

Power Site Reserve No. 258	Executive Order of 04/13/12	1,586 acres
Power Site Reserve No. 582	Executive Order of 01/19/17	3,671 acres
Water Power Designation No. 3	Secretarial Order of 01/19/17	3,671 acres
Power Site Reserve No. 579	Executive Order of 02/01/17	314 acres
Power Site Classification No. 2	Secretarial Order of 05/19/21	6 acres
Power Project No. 10199	45 FR 80871 (Salt Caves Project)	1,122 acres


OREGON
CALIFORNIA
T. 39 S.
T. 40 S.
T. 40 S.
T. 41 S.
T. 41 S.
T. 48 N.
T. 48 N.
T. 47 N.
R. 5 E.
R. 6 E.
R. 6 E.
R. 7 E.
R. 4 W.
R. 3 W.
R. 3 W.
R. 2 W.
R. 2 W.
R. 1 W.
Otwin Spr
Cold Spring
J. C. Boyle Resvr.
Camp 4 Creek
Mule Hill
Creek
Tom Hayden Creek
Mud Spring
Big Bend
River
Klamath
Powerline
Ranch
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
KNF
Secret Spring
Secret Spring Mtn
POWERLINE
Gillis
Long Prairie Creek
Edge Creek
Klamath River
Shovel Creek
Panther Canyon
Bear Wallow Spring
Negro Creek
Canyon
Bear Canyon
Lucky Spr
Spannus Spring
Grouse Spr
McGavin Peak
66
2,4
1
2,4,6
6
1,6
3,6
2,4
3
5
2,4,6
1

LEGEND

- 1 Power Site Reserve No. 258
- 2 Power Site Reserve No. 582
- 3 Power Site Reserve No. 579
- 4 Water Power Design No. 3
- 5 Power Site Classification No. 2
- 6 Power Project No. 10199 (Salt Caves)

MAP 1-3

UPPER KLAMATH RIVER

POWER WITHDRAWALS

1989

N
1 0 1 2 3 Miles

> forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities: Provided, that nothing in this section shall be construed to interfere with the use and development of power sites as may be authorized by law.

Approximately 3,500 acres in the study area are O&C lands, managed by the BLM under the authority of the O&C Act. The remaining public domain lands are managed for multiple resource use under the authority of the Federal Land Policy and Management Act of 1976.

Oregon Scenic Waterways Act

The Oregon State Scenic Waterways Act (ORS 390.805 to 390.925), administered under the authority of the Oregon Transportation Commission, through the State Parks and Recreation Division, is a statewide law for river conservation that was established in 1969. The Oregon Scenic Waterways System was set up through the Scenic Waterways Act.

In November 1988, Ballot Measure 7 was passed by majority vote in Oregon adding, among other rivers, the upper Klamath River, from the J.C. Boyle Dam Powerhouse to the Oregon-California state line and 1/4-mile from the ordinary high water mark on each bank, to the Oregon Scenic Waterways System.

The goals of the Oregon Scenic Waterways Act are to protect the free-flowing character of designated rivers for fish, wildlife and recreation; to protect and enhance scenic, aesthetic, natural, recreation, scientific, and fish & wildlife qualities along scenic waterways; to protect private property rights; to promote expansion of the system; and to encourage other state agencies to act consistently with these goals. The Oregon Act does not restrict the use of existing water rights; allow public use of private property without consent of the landowner; or require existing developments or private property uses to be removed.

Dams, reservoirs, impoundments, and placer mining are not allowed in scenic waterways. Proposed developments or changes in existing uses must be reviewed by the Oregon Transportation Commission before they take place. Filling in the river, removing soil and gravel from the river or changing the riverbank in any way, regardless of the amount of soil or rock involved, requires special approval of the State Land Board and the Director of the Division of State Lands. The Director of the Oregon Department of Water Resources is required to insure that new water rights issued within the scenic waterway will be used only for human consumption, livestock, fish, wildlife and recreation. Other uses may be permitted, but only after a finding that sufficient flow is available for existing uses, plus the previously described five. Other rules governing the use of scenic waterways and their related adjacent lands (within 1/4-mile of the river) are described in the Oregon Administrative Rules (OAR 736-40-005 to 736-40-095).

The State Scenic Waterways Act provides more protection to values on private property than does the Federal Wild and Scenic Rivers Act. There is currently debate on the issue of what effect, if any, the State Scenic Waterways Act would have on further hydroelectric development of the upper Klamath River under FERC licensing authority. Nothing in this report should be construed as taking a particular position on this issue.

County Comprehensive Planning

The Oregon Land Use Act of 1973 requires that local comprehensive plans be consistent with the 19 statewide goals adopted by the State Land Conservation and Development Commission. Goal 5 "Open Spaces, Scenic and Historic Areas, and Natural Resources," provides for protection of a variety of natural and cultural resources, including "potential and approved federal wild and scenic rivers and state scenic waterways" through plan inventories and local regulations to prevent conflicting land uses to the extent possible. Cities and counties must adopt programs as elements of their comprehensive plans that will (1) ensure open space, (2) protect scenic and historical areas and natural resources, and (3) promote healthy and visually attractive environments in harmony with the natural landscape. The four resources in the Klamath River Canyon deemed significant by Klamath County were hydro energy, the potential scenic waterway, fish and wildlife (specifically riparian, deer winter range, bald eagle nests), and cultural resources. Klamath County's Comprehensive Plan Goal 5 element is currently being updated to reflect new inventory information and changes incurred when Ballot Measure 7 was passed in November 1988, adding the upper Klamath River to the Oregon State Scenic Waterways System.

The other elements in Klamath County's Comprehensive Plan that are applicable to the upper Klamath River Canyon are Goal 6 (Air, Water, and Land Resources Quality) and Goal 8 (Recreational Needs).

Activities affecting these goals are coordinated primarily through the State Parks and Recreation Division.

Effect of Wild and Scenic River Designation on Private Lands

Land use controls on private lands are a matter of state and local zoning. Although the Wild and Scenic Rivers Act of 1968 includes provisions encouraging protection of river values through State and Federal land use planning, these provisions are not binding on local governments.

The Federal government is responsible for assuring that designated rivers are managed in a manner which meets the intent of the Act. In the absence of local or state river protection provisions, the Federal government could assure compliance through acquisition of private lands or interests in lands.

The Wild and Scenic Rivers Act specifically prohibits Federal use of condemnation in the fee title purchase of lands if 50 percent or more of the land within the boundary is already in public ownership. If designated, the Klamath River would fall into this category. The Act does provide the Federal government with authority to purchase scenic, conservation, or access easements through condemnation proceedings, but this measure of last resort would be used only as necessary to remove a threat to the river.

The basic objective of Wild and Scenic River designation is to maintain the river's existing condition. If a land use or development clearly threatens the outstandingly remarkable values which resulted in the river's designation, efforts would be made to remove the threat through local zoning, State Scenic Waterways Act provisions, land exchanges, purchases from willing sellers, and other actions short of condemnation.

Since the basic objective of Wild and Scenic River designation is to maintain existing river conditions, agriculture and grazing activities occurring at the time of designation would generally not be affected. In the case of the Klamath River, timber harvest activities on private lands within the river corridor would continue to be regulated by the Oregon Forest Practices Act.

Chapter 2—Existing Situation

Introduction

This chapter describes the existing situation of the upper Klamath River Canyon, including the general setting, land uses, and a description of resource values.

General Setting

The general setting of the study area includes the physiography, land ownership, existing rights, socioeconomics, regional transportation, and access.

Physiography

The Klamath River lies within the High Cascades physiographic province and borders the Basin and Range province on the west (Franklin and Dyrness 1973). These factors enhance the biological diversity found in the Klamath River Canyon. The only rivers in Oregon and California that bisect the Cascade Range are the Klamath and Columbia in Oregon and the Pit in California. The upper Klamath River drains south-central Oregon, east of the Cascade Range. The river begins at the lower end of Lake Ewauna in the city of Klamath Falls, Oregon and flows southwesterly into California and west to the Pacific Ocean (map 1-1). The study portion of the upper Klamath River flows through a steep-walled, basalt canyon in Klamath County, Oregon and Siskiyou County, California.

The topography in the study area varies from flat to gently sloping along the river benches to near-vertical at the canyon walls. The canyon rim's basalt cliffs rise to 1,000 feet above the river. The average river gradient in segment 1 is 75 feet per mile; segment 2 is 27 feet per mile from RM 219.5 to 214.3, and 77 feet per mile from RM 214.3 to 209.3; and segment 3 is 32 feet per mile.

Annual precipitation, most commonly in the form of rain, ranges from 15 to 20 inches during fall, winter, and spring. Summer months are hot and dry with occasional thunderstorms developing in the late afternoon. In the winter, snow falls on the rim of the canyon, but only rarely accumulates on the canyon floor. Winter temperatures in the canyon drop into the low 20's and summer temperatures climb into the high 80's or 90's.

Air quality is generally good within the canyon since it is far removed from population centers or industrialized areas.

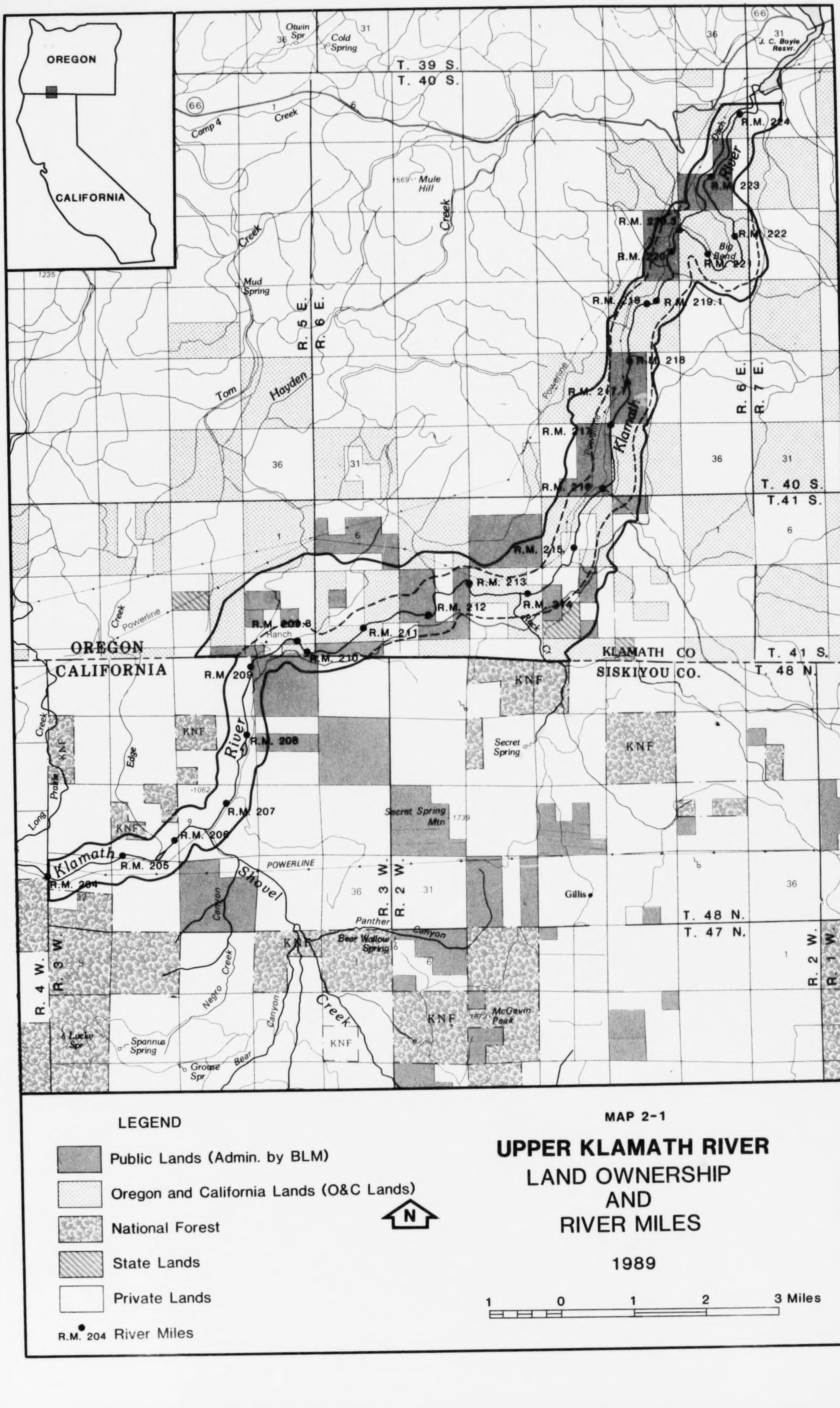
Land Ownership

Land ownership within the study area boundary is as follows: segment 1, 77% BLM and 23% private; segment 2, 74% BLM, 2% State, and 24% private; and segment 3, 11% BLM, 2% National Forest Service, and 87% private ownership (map 2-1). Table 2-1 shows land ownership in both acres and percents, by segment.

Existing Rights

Rights-of-way for three powerlines and four roads totaling 27.3 miles in the study area affect 259 acres of Federal land. Table 2-2 summarizes the rights-of-way by segment. There are no existing mining claims. Water rights are discussed in the Water Resources section of this chapter.

Steep canyon walls in segment 2.



MAP 2-1

UPPER KLAMATH RIVER
LAND OWNERSHIP
AND
RIVER MILES

1989

LEGEND
Public Lands (Admin. by BLM)
Oregon and California Lands (O&C Lands)
National Forest
State Lands
Private Lands
R.M. 204 River Miles
N
1 0 1 2 3 Miles
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 39 S.
T. 40 S.
T. 41 S.
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
R. 5 E.
R. 6 E.
R. 7 E.
Klamath
River
R.M. 204
R.M. 205
R.M. 206
R.M. 207
R.M. 208
R.M. 209
R.M. 209.8
R.M. 210
R.M. 211
R.M. 212
R.M. 213
R.M. 214
R.M. 215
R.M. 216
R.M. 217
R.M. 217.7
R.M. 218
R.M. 219
R.M. 219.1
R.M. 220
R.M. 220.3
R.M. 221
R.M. 222
R.M. 223
R.M. 224
J. C. Boyle Resvr.
Ditch
Big Bend
66
Otwin Spr
Cold Spring
Camp 4
Creek
Mule Hill
1569
Mud Spring
Tom
Hayden
1235
Powerline
Ranch
Rock Cr.
KNF
Secret Spring
Secret Spring Mtn
1739
Gillis
POWERLINE
Edge
Long
Prairie
Shovel
Canyon
Panther
Bear Wallow Spring
Negro Creek
Bear
McGavin Peak
1673
Lucky Spr
Spannus Spring
Grouse Spr
-1062
36
31
1
6

Table 2-1. Upper Klamath River Study Area Land Ownership

Landowner	Acres	Percent
Segment 1		
Public		
Bureau of Land Management		
Oregon & California	785	47
Public Domain	507	30
Private		
Pacific Power & Light Co.	79	5
Weyerhaeuser Co.	234	14
Jeld-Wen, Inc.	63	4
Hazel A. Simmon	2	<1
Total	1,670	100
Segment 2		
Public		
Bureau of Land Management		
Oregon & California	2,716	43
Public Domain	1,944	31
State		
Oregon	120	2
Private		
Pacific Power & Light Co.	991	16
Weyerhaeuser Co.	173	3
Joseph & Mary Ann Laubacher	157	2
Frederick Ehlers	157	2
James C. Brown	32	1
Thomas J. Orr	14	<1
William & Carmen Hadwick	6	<1
Total	6,310	100
Segment 3		
Public		
Bureau of Land Management		
Public Domain	202	11
Klamath National Forest	41	2
Private		
Pacific Power & Light Co.	1,368	76
Southern Pacific Land Co.	202	11
Total	1,813	100

Table 2-2. Upper Klamath River Study Area Rights-of-Way

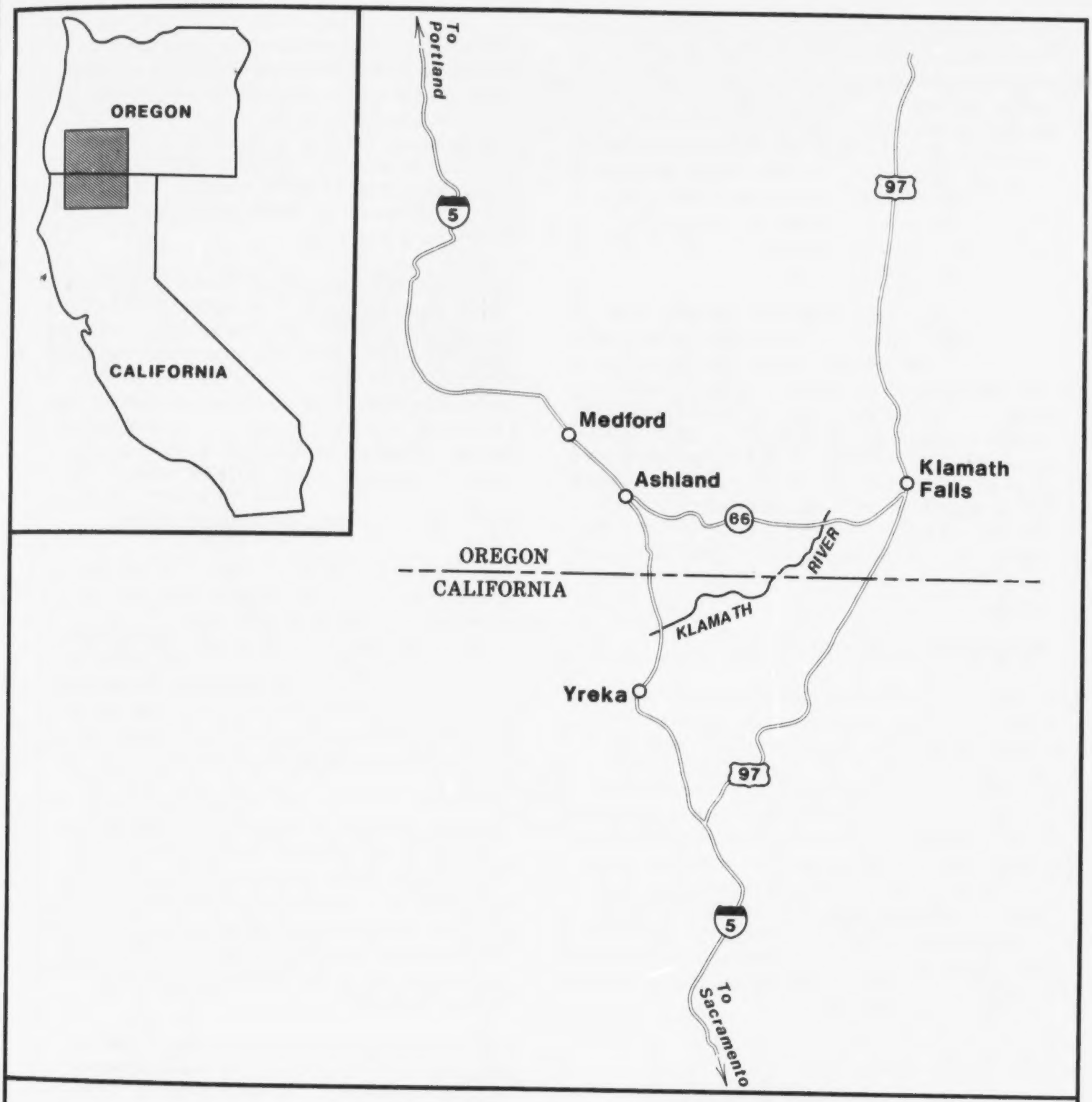
Right of Way	Width (feet)	Length (miles) Private	Length (miles) BLM
	Segment 1		
Powerlines			
OR 24416	100	0.5	2.0
OR 17364	50	0.4	0.2
ORE 013482	—	0.0	<0.1
Roads			
OR 20608	60	0.0	1.8
Power Project #2082	100	2.0	5.3
	Segment 2		
Powerlines			
OR 17364	50	1.1	5.5
Roads			
Power Project #2082	100	1.0	5.2
Access Road*	60	4.4	4.9
	Segment 3		
Powerline	50	4.8	0.5
Topsy Road	100	4.9	1.8

*Includes portions of Topsy Road and the J.C. Boyle Powerhouse Access Road.

Socioeconomics

The environmental impact statement (EIS) for the proposed Salt Caves hydroelectric project contains an economic analysis of the feasibility and effects of potential hydroelectric development of the upper Klamath River. This study does not duplicate that type of analysis. A copy of the 1989 Draft EIS can be obtained from the Federal Energy Regulatory Commission.

Encompassed within a 60-mile radius of the Klamath River are three counties—Klamath and Jackson counties, Oregon; and Siskiyou County, California. Approximately 241,000 people live within this tri-county area. The four major population centers (map 2-2) are Klamath Falls (Klamath County), with a population of 17,100; Medford (Jackson County), population 43,900; Ashland (Jackson County), population 14,900; and Yreka (Siskiyou County), population 6,700. All figures are current as of 1988, except Ashland's which is 1980's population.


OREGON
CALIFORNIA
To Portland
5
97
Medford
Ashland
Klamath Falls
66
OREGON
CALIFORNIA
KLAMATH RIVER
Yreka
97
5
To Sacramento

MAP 2-2

REGIONAL TRANSPORTATION AND MAJOR POPULATION CENTERS

N
10 0 10 20 Miles

The economy of this tri-county area is heavily dependent upon timber production and processing, agriculture, and tourism. Timber and agricultural production are the two largest industries in Klamath County. Wood products and related industries provide a high percentage of the jobs in Jackson County, although tourism employs over 50% of the work force in Ashland. The economy of Siskiyou County is divided between government employment, retail trade and services, and timber.

Recreation plays a role within the economies of all three counties, but is minor compared to other industries. Whitewater rafting is a major consideration for recreation-based economics for the upper Klamath River. In 1989, the BLM issued 21 special recreation permits for whitewater rafting and related activities (video and still photography). Various estimates have been proposed for the economic contribution of rafting on the upper Klamath River. These range from an average of $413,450 per year (City of Klamath Falls 1988) to $2,012,380 for 1986 (Ward 1987). The BLM has not developed figures on recreation-based economics.

Regional Transportation

The upper Klamath River Canyon is readily accessible from the four major population centers in the region. West of the canyon, Interstate 5 extends north-south through Medford, Ashland, and Yreka (map 2-2). East of the canyon, U.S. 97 runs north-south through Klamath Falls. Both highways provide access from the major metropolitan areas of Portland, Oregon and Sacramento and San Francisco, California. State Highway 66, one mile north of the study area, provides east-west access between Klamath Falls, Ashland, and Medford. Regularly scheduled commercial air service is available at the Medford and Klamath Falls airports, and there are daily rail and bus services to Klamath Falls.

Access

The main transportation route to the river is by Highway 66 (Greensprings Highway), an east-west route between U.S. 97 and Interstate 5. Physical and administrative access is provided to the river corridor by several improved and seasonal roads in the canyon. Physical public access is currently unrestricted; however, on some road segments on private land, legal public use is at the discretion of the land owner.

Approximately seven miles west of Keno, Oregon, where Highway 66 crosses the Klamath River there are two access roads—one leading to the Topsy Road, which parallels the east side of the river in all three segments, the other to the J.C. Boyle Powerhouse access road which parallels the west side of the river in segments 1 and 2 (map 2-3). Picard road from Dorris, California provides access to the Topsy Road from the southeast.

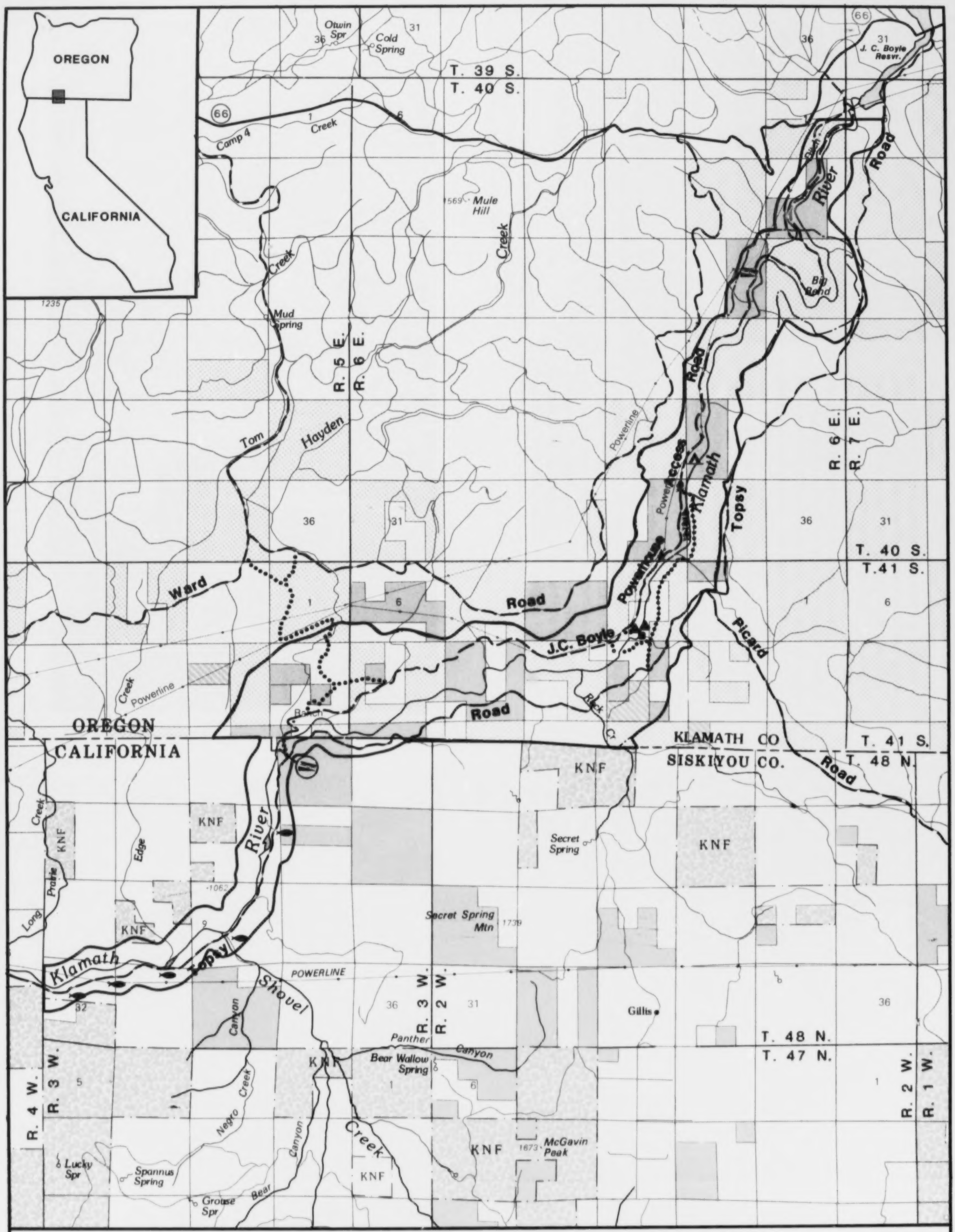
Topsy Road travels high above the river in segments 1 and 2, descends to river level at RM 208 in California and remains at river level through segment 3 to Copco Reservoir. Streamside access from the Topsy Road is available during much of the year at Frain Ranch in segment 2. Above RM 209 in segment 3 is the BLM raft take-out area, providing easy access to the river. There are five designated fishing access points to the river on private land with parking spaces along Topsy Road in segment 3 that were provided by the Pacific Power and Light Company (PP&L).

The graveled J.C. Boyle Powerhouse access road enters the study area at the northern boundary and travels along the western canyon wall. The road generally remains far above the river, descending to streamside only at the powerhouse area, the BLM campsite (approximately RM 217), and at the Oregon-California border, where it ends. A graveled flume maintenance road, adjacent to the concrete flume, also travels along the western canyon wall in segment 1.

Access to the Klamath River from the powerhouse road is present in segment 1 at the northern study area boundary, at the powerhouse, and at the BLM raft launch area (1/4-mile downstream from the powerhouse). In segment 2, river access is present at the BLM campsite, Frain Ranch (RM 215), 1/4-mile downstream from Frain Ranch and across from Salt Caves (RM 211.8).

From the northern study area boundary to approximately RM 213, the powerhouse road is generally passable year-round. This access road is maintained from Highway 66 to the powerhouse by PP&L. Beyond the powerhouse, the unimproved access road consists of a single-lane, rocky roadbed. From RM 213 to the state line, the road is used seasonally since it is usually impassable in the winter and early spring due to snow and mud.

Other roads on the west side of the river include a seasonal dirt road that begins above the canyon rim and intersects the powerhouse access road at RM 211 and 209.5, and a seldom used jeep road that parallels the river between the powerhouse road and the river, between RM 216.3 and 215.


OREGON
CALIFORNIA
66
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
Camp 4
Creek
Mule Hill
1569
J. C. Boyle Resvr.
River
Road
Big Bend
Mud Spring
R. 5 E.
R. 6 E.
Tom
Hayden
Powerline
Access
Road
Klamath
Topsy
R. 6 E.
R. 7 E.
T. 40 S.
T. 41 S.
Ward
Powerhouse
J.C. Boyle
Picard
Road
Rock Cr.
Ranch
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
Road
KNF
Secret Spring
Long
Prairie
Edge
River
Secret Spring Mtn
1739
Klamath
Topsy
Shovel
POWERLINE
R. 3 W.
R. 2 W.
Gillis
T. 48 N.
T. 47 N.
Panther
Canyon
Bear Wallow Spring
R. 4 W.
R. 3 W.
Negro
Creek
Canyon
Creek
McGavin Peak
1673
R. 2 W.
R. 1 W.
Lucky Spr
Spannus Spring
Grouse Spr
Bear
N

LEGEND

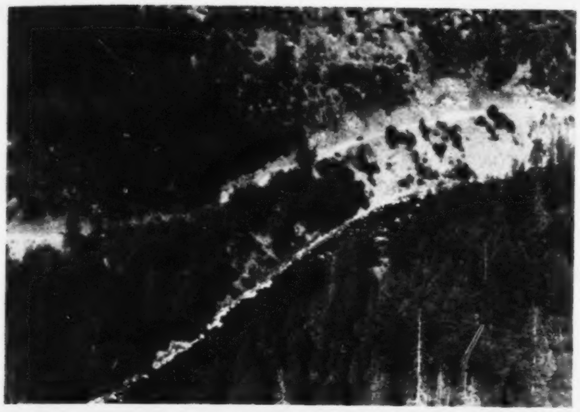
- Highway 66
- Primary Access Roads
- Secondary Access Roads
- BLM Raft Launch Area
- BLM Semi-Primitive Campsites
- Primitive Campsite (Private Property)
- Primitive Campsites with Fire Rings
- Frain Ranch (Recreational Use Area)
- BLM Raft Take-Out Area
- Fishing Access Points
- SRMA Boundary

MAP 2-3

UPPER KLAMATH RIVER
ACCESS ROADS
AND
RECREATION SITES

1989

1 0 1 2 3 Miles



Powerhouse access road near BLM boat launch site.

Land Uses

Land in the Klamath River Canyon is used for energy generation, recreation, wildlife habitat management, range resources, timber management, and Native American traditional use.

Energy Generation

There is high potential for hydroelectric energy generation on the Klamath River. The study portion of the Klamath River lies between two hydroelectric projects—J.C. Boyle in Oregon and Copco in California. Hydroelectric facilities also exist at the Keno and Irongate dams. The J.C. Boyle 88-megawatt power generation plant is 4.6 river miles below J.C. Boyle Dam. This peaking operation has two turbine generators that provide power during high use (peak) periods. Up to 2,500 cubic feet per second (cfs) of flow can be diverted at the J.C. Boyle Dam. This water passes through an above-ground concrete flume for 2.1 miles then enters a tunnel, which passes a short distance through the canyon wall, before entering the penstocks and turbines. Additional facilities associated with the J.C. Boyle Powerhouse (segment 1) include a surge tank, three duplexes, substation, and storage building at the powerhouse site, and a gaging station below the powerhouse. Roads and powerlines associated with the project are found in all three segments.

The City of Klamath Falls has an application filed with the Federal Energy Regulatory Commission for the proposed Salt Caves hydroelectric project. The proposed project would fall within segments 1 and 2, and would have facilities that are similar to the existing J.C. Boyle project facilities. The proposed project and its effects are described in a Draft EIS released for public comment in August 1989 by the FERC.

J.C. Boyle Powerhouse.

Recreation

Recreational use activities within the study area include whitewater boating, fishing, hunting, camping, sightseeing, hiking, photography, picnicking, wildlife observation, driving for pleasure on existing roads, off-road vehicle use, and horseback riding. The majority of recreational use occurs below the powerhouse area because it has better streamside access for fishing, predictable flows suitable for whitewater boating, and is more natural and scenic with less development than the area above the powerhouse.

Wildlife Habitat Management

An important land use in the Klamath River Canyon is wildlife and fish habitat management. The BLM is the primary agency that manages public lands for wildlife habitat, while Oregon and California State fish and wildlife agencies manage the populations.

Range Resources

Homesteaders have grazed cattle, sheep, and horses within the Klamath River Canyon since the late 1800's. Currently, cattle are the only domestic stock that graze within the canyon. Although no figures are available on historic livestock use in the canyon, grazing use has been intense as evidenced by a change from native perennial grasses to invading non-native annual grasses currently dominating the rangeland. Cattle, wildlife, and on the northwest side of the canyon, a small herd of wild horses, compete for forage. Weyerhaeuser Corporation, PP&L, and BLM-administered lands are used for grazing in and around the study area (map 2-4). In addition to grazing, hay production is a common land use on private lands adjoining the river in segment 3.

Existing Allotments. The first grazing lease on BLM lands in the canyon was issued in 1960. Currently there are two grazing allotments in the study area, the Edge Creek Allotment and the Laubacher Allotment. The Laubacher Allotment, located entirely in California, covers 1,840 acres of BLM land. Only 200 acres fall within the study area. The majority of the Edge Creek Allotment (8,860 acres of which are BLM-administered) is outside the study area, but a portion of it is located on BLM and private lands in segments 1 and 2. The portion in the study area extends from the rim to the river's edge and includes a total of 3,817 acres, 980 of which are private. This allotment is divided into the Ward Pasture to the south and the North Pasture. Pacific Power and Light Company has issued two grazing permits in the Edge Creek Allotment. Most of its leased land is within the study area.

Leases issued by PP&L do not limit numbers of cattl season of use, or quantity of forage consumed, but d set other guidelines that the lessee must adhere to.

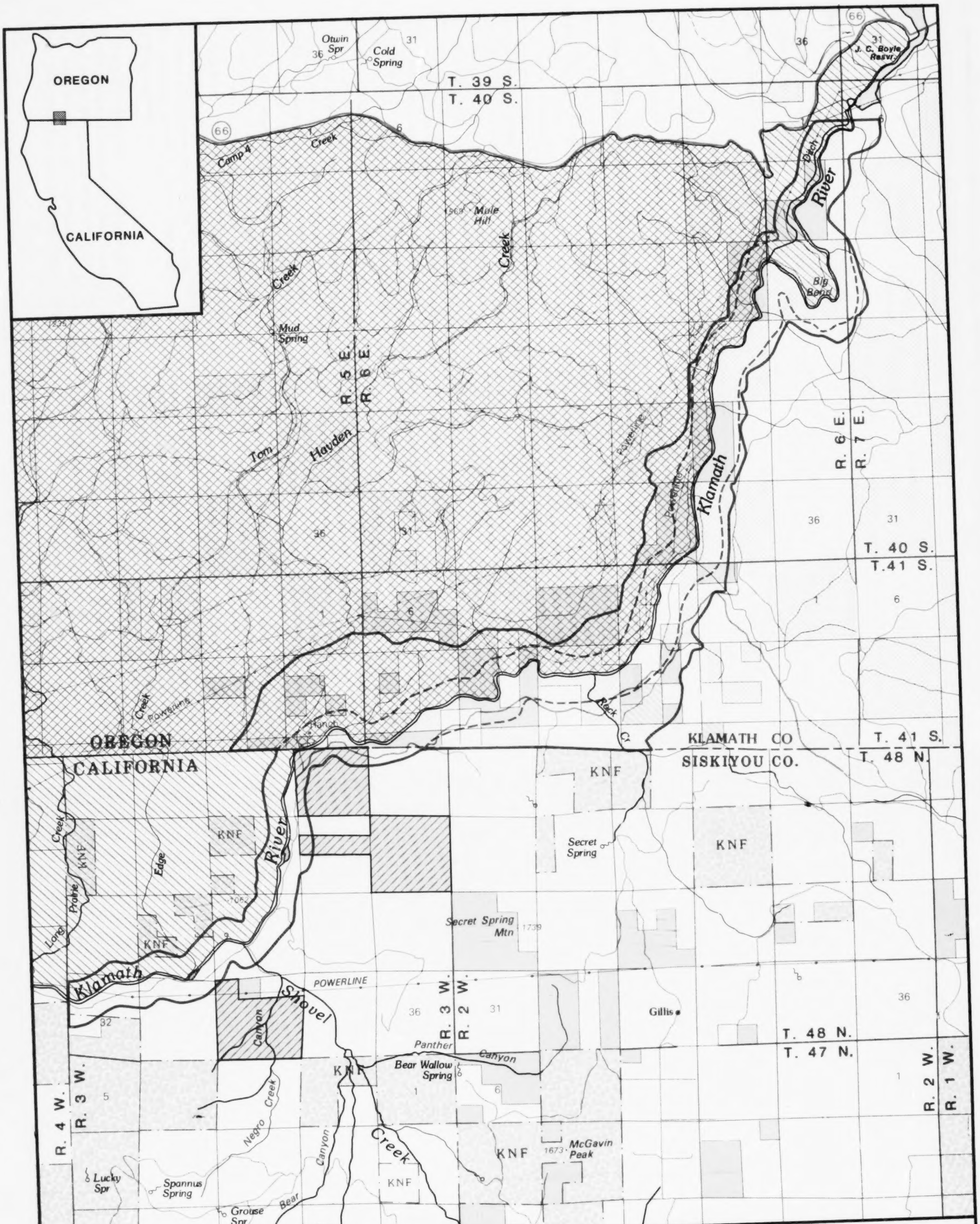
Grazing on the Laubacher Allotment is currently permitted on BLM lands in segment 3 and also occur on private land adjacent to the river, which is primaril pastureland and residual forage following hay production.

Although they are not within the study area, two othe BLM allotments border the rim on the east side of the canyon adjacent to segments 1 and 2.

Table 2-3 shows that the grazing season on BLM leased lands begins in April on the Laubacher Allotment, where early spring greenup provides the first available forage. Cattle are then moved onto the Edge Creek Allotment from May to July to graze meadows and flat terrain along the riverbottom, accessible benches above the river, and the Ward Pasture. Finally, the cattle are moved to the North Pasture for the remainder of the grazing season.

Range Condition. Impacts from past grazing practices have resulted in the vegetative composition of rangelands changing from perennial native grasses t introduced annual species. Riparian vegetation has also been impacted by grazing. The portions of the canyon that have retained their natural vegetative composition are primarily in steep topography that ar inaccessible to livestock. Native grasses that were typical of the once dominant perennial range but are now limited, include Idaho fescue, bluebunch wheatgrass, pine bluegrass, few-flowered wild oatgrass, melic grass, and needle grass. Cheatgras medusahead wildrye, two-flowered fescue, bulbous bluegrass, foxtail barley, thistle, and dandelion are presently found, indicating an annual rangeland and poor range condition. All of these annuals are poor forage for both livestock and wildlife. Factors causin this change include early spring grazing, historical burning, natural erosion, trampling and soil compaction by livestock, and overgrazing. These conditions are favorable to the weedy annual species that easil take over the native perennial plants and grasses.

Two studies have been done in the Klamath River Canyon in relation to vegetation and range condition one by the Medford District BLM in 1981 and the other for the proposed Salt Caves hydroelectric project by the City of Klamath Falls in 1984 and 198 Both determined the rangelands to be in poor condition. The BLM Range Study included 5,580 acres in the proposed project area, mostly within the river study boundary. It rated ecological range condition


OREGON
CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
66
Camp 4 Creek
J. C. Boyle Resvr.
Ditch
River
Big Bend
Mule Hill
Creek
Mud Spring
R. 5 E.
R. 6 E.
Tom Hayden Creek
Powerline
Klamath
R. 6 E.
R. 7 E.
T. 40 S.
T. 41 S.
Rock Cr.
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
Long Prairie Creek
Edge
River
Klamath
Secret Spring Mtn
POWERLINE
Shovel Canyon
R. 3 W.
R. 2 W.
Panther Canyon
Bear Wallow Spring
Gillis
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
Negro Creek
Canyon Creek
McGavin Peak
Lucky Spr
Spannus Spring
Grouse Spr
Bear

LEGEND

▨ Pokegama Wild Horse Management Area

▨ Grazing Allotments

MAP 2-4

UPPER KLAMATH RIVER

GRAZING ALLOTMENTS
AND
WILD HORSE MANAGEMENT AREA

1989

N
1 0 1 2 3 Miles

Table 2-3. Grazing Leases and Season of Use Within the Study Area

Lease	Lease Number	Cattle Allowed	AUMs[1]	Season of Use	Lessor
Edge Creek Allotment	0102				BLM, Weyerhaeuser, PP&L
Ward Pasture		59	147	May 1-July 15	
North Pasture		180	905	May 15-Oct 15	
Laubacher Allotment[2]	0155	46	92	Apr 15-June 14	BLM Redding Resource Area

[1] Animal Unit Month (AUM)—the amount of forage necessary for the sustenance of one cow or its equivalent for one month.

[2] This lease administered by Klamath Falls Resource Area.

64% of these acres to be rated poor (early seral stage), 28% fair, 8% good, and 0% excellent condition (late seral stage).

Wild Horse Management Area. A portion of the Pokegama Wild Horse Management Area (WHMA) is located within the study area (map 2-4). The WHMA is bounded by Copco Lake and the Klamath River on the south and east, Jenny Creek on the west, and Highway 66 on the north. These natural boundaries appear to be physical barriers to movement of wild horses and therefore to habitat expansion. The horses are quite mobile and have been seen throughout the management area, though most high use habitat is outside the canyon and study area.

Though the wild horse population has fluctuated over the years, local residents have reported wild horses in the Klamath River Canyon area since the early 1900's. In 1972, 25 horses were counted during BLM's first inventory. Since then, the herd has been inventoried biannually and has ranged from 25 to a high of 41 in 1985, the latest count. BLM's current management framework plan recommends a population level of 30 horses and dictates the biannual inventory to determine the season of use, distribution and concentration areas, rate of reproduction, and carrying capacity.

A range EIS, prepared in 1983 by the Medford District, allocated 250 Animal Unit Months (AUMs) for the Pokegama wild horse herd within the WHMA. Part of the WHMA is within critical deer winter range, which was taken into account in allocating AUMs.

Studies conducted for the original wild horse management plan showed that the horses fed primarily on grass, so it does not appear that they compete with deer for browse on critical winter range; however, there may be direct competition for grass during greenup periods when deer feed heavily on grasses and forbs. There is direct competition between horses and cattle for grasses. This could become a problem since both horses and cattle concentrate on meadows during late summer, which could result in overgrazing of these areas.

Timber Management

BLM's 1990 timber production classification inventory shows approximately 1,810 acres of public land in the study area (map 2-5) that are classified for high-intensity timber management. These commercial forest lands are part of the timber production base from which continuous timber production is possible through sustained yield management techniques. Regeneration on these lands is expected within five years of harvest. The acreage that is actually available for harvest is slightly less than 1,810 acres because BLM management plans provide for a 100-foot "no-cut" buffer strip along the river. Standing volume is estimated at about 38 million board feet (MMBF). Almost two-thirds of the high-intensity timber management lands are on O&C lands, generally where there are no existing access roads. None of the high-intensity lands are in segment 3.
Table 2-4 shows the categories of BLM high-intensity timber management lands.

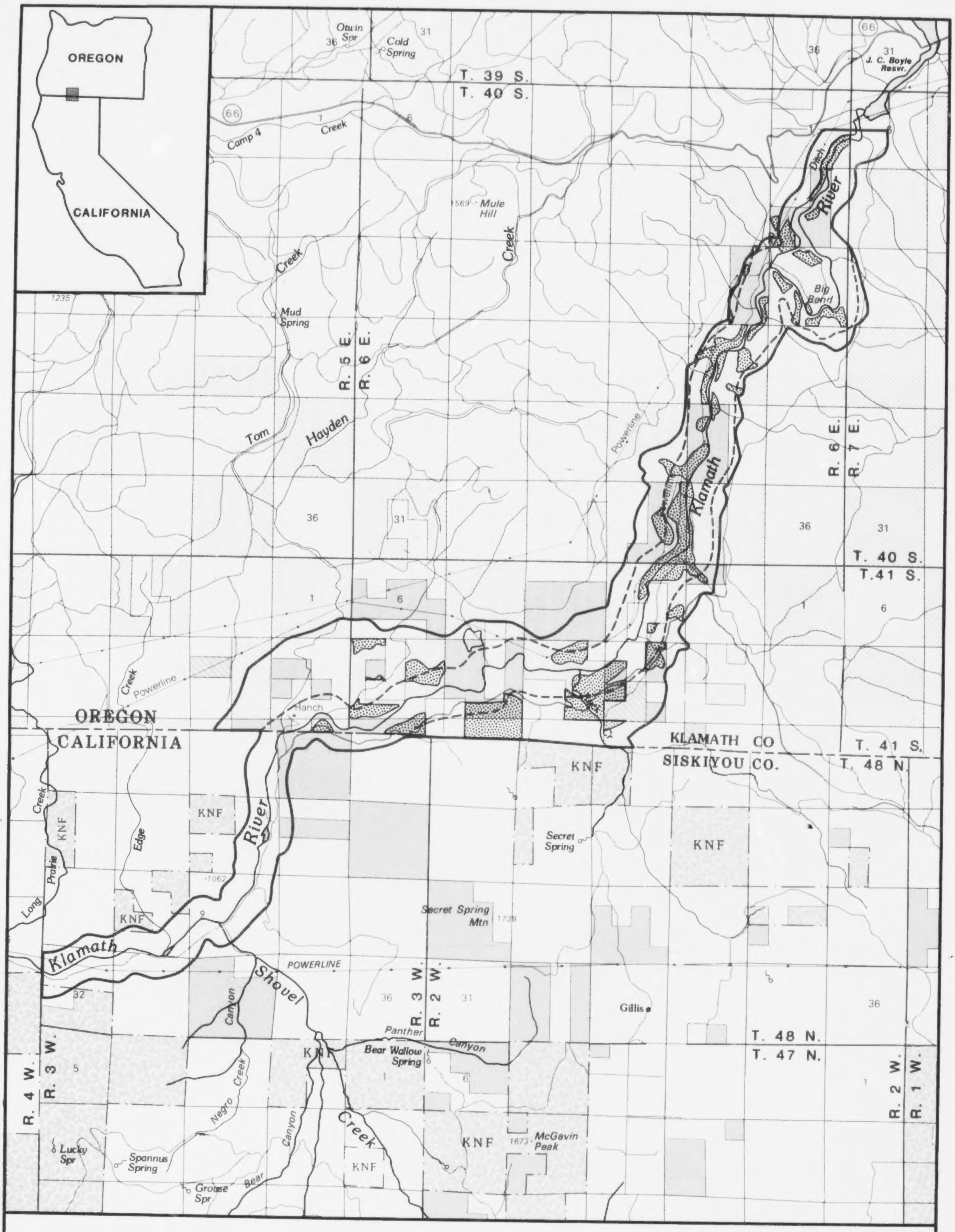
Table 2-4. BLM-Administered High-Intensity Timber Management Lands Within the Klamath River Canyon

BLM Land Status	Study Area (Acres)	Percent of Total	Volume (MMBF)
Segment 1	1,670		
Oregon & California	180	11	4,362
Public Domain	123	7	3,453
Total	303	18	7,815
Segment 2	6,310		
Oregon & California	958	15	17,564
Public Domain	549	9	12,566
Total	1,507	24	30,130
Segment 3	1,813		
Total	0	0	0
Segments 1, 2, 3	9,793		
Oregon & California	1,138	12	21,926
Public Domain	672	7	16,018
Total	1,810	19	37,944

There has been no timber sale activity in the Klamath River Canyon during the last decade. The current management direction under the Jackson-Klamath Management Framework Plan is to allow no new roads within the canyon and to manage the lands under Visual Resource Management Class II standards to retain the existing character of the landscape. Management activities may be visible but should not attract attention of the casual observer. Timber harvest to salvage fire-, insect-, or diseased-killed timber is currently allowed, but only to the extent required to enhance the recreation experience. Current forest management activities by both BLM and PP&L are minimal and are oriented toward recreational, scenic, and wildlife values.

PP&L owns 79 acres in segment 1, 991 acres in segment 2, and 1,368 acres in segment 3. Most of its property was acquired primarily for hydroelectric purposes. PP&L managed some of its forest land within the canyon through partial cut removals in the 1970's. Very little commercial timber value exists on PP&L lands. They are presently managing timber on a limited harvest schedule on a short-term basis. PP&L is currently formulating a comprehensive plan for long-term management direction, which includes timber management.

Weyerhaeuser Company owns 234 acres in segment 1 and 173 acres in segment 2. Most of these lands and roads, which are open to the public for recreational purposes, are above the canyon so that visual resources are not greatly affected.


OREGON
CALIFORNIA
Otuin Spr
Cold Spring
T. 39 S.
T. 40 S.
J. C. Boyle Resvr.
Camp 4 Creek
Mule Hill
Creek
Mud Spring
R. 5 E.
R. 6 E.
Tom Hayden Creek
Ditch
River
Big Bend
Powerline
Klamath
R. 6 E.
R. 7 E.
T. 40 S.
T. 41 S.
OREGON
CALIFORNIA
Ranch
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
Secret Spring Mtn
Long Prairie Creek
Edge
Klamath River
POWERLINE
Shovel Creek
Canyon
R. 3 W.
R. 2 W.
Panther Canyon
Bear Wallow Spring
Gillis
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
Negro Creek
Canyon
McGavin Peak
Lucky Spr
Spannus Spring
Grouse Spr
Bear

MAP 2-5

UPPER KLAMATH RIVER

COMMERCIAL FOREST LANDS

1989

▨ BLM Commercial Forest Lands

N

1 0 1 2 3 Miles

Increases in recreation use, timber harvest, and private land developments, combined with the difficulties of ensuring an aggressive fuels reduction program, have increased fire risks and hazards in and around the canyon. Fire season in the Klamath River Canyon normally starts in June and lasts until approximately mid-October, but each year's season depends on annual weather conditions. Thunderstorms can occur throughout the spring, summer, and fall, occasionally starting lightning-caused fires, the main cause of fires in the canyon.

Fuels management activities by the BLM surrounding the study area consist of burning slash from timber harvesting and broadcast burning timber and brush fuels. Prescribed fire in the study area has been used by the BLM to improve and protect wildlife habitat and livestock forage production.

The Oregon Department of Forestry is contracted through fiscal year 1991 by the BLM to provide fire suppression and pre-suppression in the area. The BLM provides guidance to the Department on resource protection and overall fire management direction.

Native American Traditional Use

Traditional use by Native Americans of the upper Klamath River Canyon began before contact with Europeans and has continued into the present. The cultural significance of a particular area is related to the Native Americans' present-day view of the past. Before European contact, this area was used for spiritual purposes, village sites, hunting, fishing, gathering, and burial sites. Today, members of the Klamath Tribe and the Shasta Nation use the canyon for spiritual purposes.

Protection of wildlife, burial sites, cremation areas, rock cairns, and vision quest sites is important and strongly influences their current use of the area (Theodoratus et al. 1989).

Description of Resources

The existing resource values in the study area are described in this section. They are the basis for the determination of eligibility in chapter 3.

Recreation

The major recreational activities within the study area include whitewater boating, fishing, hunting, and camping. Additional activities include sightseeing, hiking, photography, picnicking, wildlife observation, driving for pleasure on existing roads, off-road vehicle use, and horseback riding. Most recreational use occurs below the J.C. Boyle Powerhouse in segments 2 and 3. The lower half of segment 1 and all of segment 2 are managed primarily under a semi-primitive motorized recreation opportunity class, with emphasis on floatboating, fishing, camping, and other compatible uses. Segment 3 is managed under a roaded natural recreation opportunity class. The six Recreation Opportunity Spectrum Classes are described in Appendix A. In the Klamath River Recreation Area Management Plan, the carrying capacity for all recreation uses was determined to be 12,500 visitor use days annually (BLM 1983). Existing recreation facilities include a raft launch area, primitive and semi-primitive campsites, a raft take-out area, and five fishing accesses. The recreational values of the study area are presently recognized by a number of other agencies and organizations, including the National Park Service (Nationwide Rivers Inventory), Oregon Department of Energy (Pacific Northwest Rivers Study), and the Oregon State Parks and Recreation Division (Statewide Comprehensive Outdoor Recreation Plan). In addition, the upper Klamath River was designated a State Scenic Waterway by majority vote in Oregon in 1988.

BLM boat launch site, RM 220.1.

Whitewater Boating. In Oregon, there are approximately 112,600 miles of rivers and streams, of which approximately 1,200 miles are currently considered suitable for recreational whitewater boating. Few of these rivers are capable of being floated year-round because of seasonal low water (Lilly 1985). There are approximately 370 miles of whitewater boating rivers in Jackson, Josephine, Curry, Klamath, Douglas, and Siskiyou counties, of which the upper Klamath River accounts for 17 miles. Only six other rivers (Rogue, Illinois, Umpqua, lower Klamath, Scott, and Salmon) comprise the remaining 350 miles. The upper Klamath River is the only river in Klamath County that sustains any significant whitewater boating activity. Table 2-5 shows regional whitewater boating rivers in Oregon and northern California (north of Sacramento).

Table 2-5. Regional Whitewater Boating Rivers in Oregon and Northern California[1]

	Season Runnable for Given Class of Rapids	General Whitewater Classification	Controlled Flow	Trip Length (days)	Floatable River Length (miles)
		Oregon			
Lower Rogue	Year-round	Class II-IV	Yes	1-5	84
Snake-Hell's Canyon	Year-round	Class III-IV	Yes	1-5	49
Upper Klamath	**Year-round**	**Class III-V**	**Yes**	**1-2**	**17**
John Day (Lower)	Dec-June	Class III-IV	No	1-5	69
Illinois	Mar-May	Class III-V	No	3-5	40
Owyhee (Lower)	Mar-June	Class III-IV	No	3-5	55
Owyhee (Upper)	Mar-June	Class III-V	No	3-5	39
Clackamas	Apr-June	Class III-V	Yes	1	20
Grande Ronde	Apr-June	Class III-IV	No	1-4	44
North Umpqua	Apr-June	Class III-IV	No	2	33
Lower Deschutes	Apr-Sept	Class III-IV	Yes	1-3	99
Upper Deschutes	Apr-Sept	Class II-IV	Yes	1-2	54
		California			
Lower Klamath	Year-round	Class III	Yes	1-5	100+
S. Fork American	Year-round	Class II-III	Yes	1-2	30
Trinity	Year-round	Class II-III	Yes	1-3	83
Salmon	Nov-June	Class III-V	No	1-3	21
Scott	Dec-June	Class III-V	No	1-2	18
Upper Sacramento	Mar-May	Class III-IV	Yes	1	25
N. Fork American	Apr-June	Class III-V	No	1	8
Yuba	Apr-June	Class III-V	No	1-2	28
Mid. Fork American	Apr-July	Class II-IV	Yes	3	24
Mid. Fork Feather	Apr-Sept	Class IV-V	Yes	3-5	32

[1] Sources:
Klamath Falls, 1986.
Interagency Whitewater Committee, 1985.
Deschutes National Forest, 1988.
Mt. Hood National Forest, 1989.
Tahoe National Forest, 1989.
Plumas National Forest, 1989.
Umatilla National Forest, 1989.
FERC Draft Environmental Impact Statement, 1989.

The first section of the river (RM 220.1 to 214.3) provides Class I to III rapids.

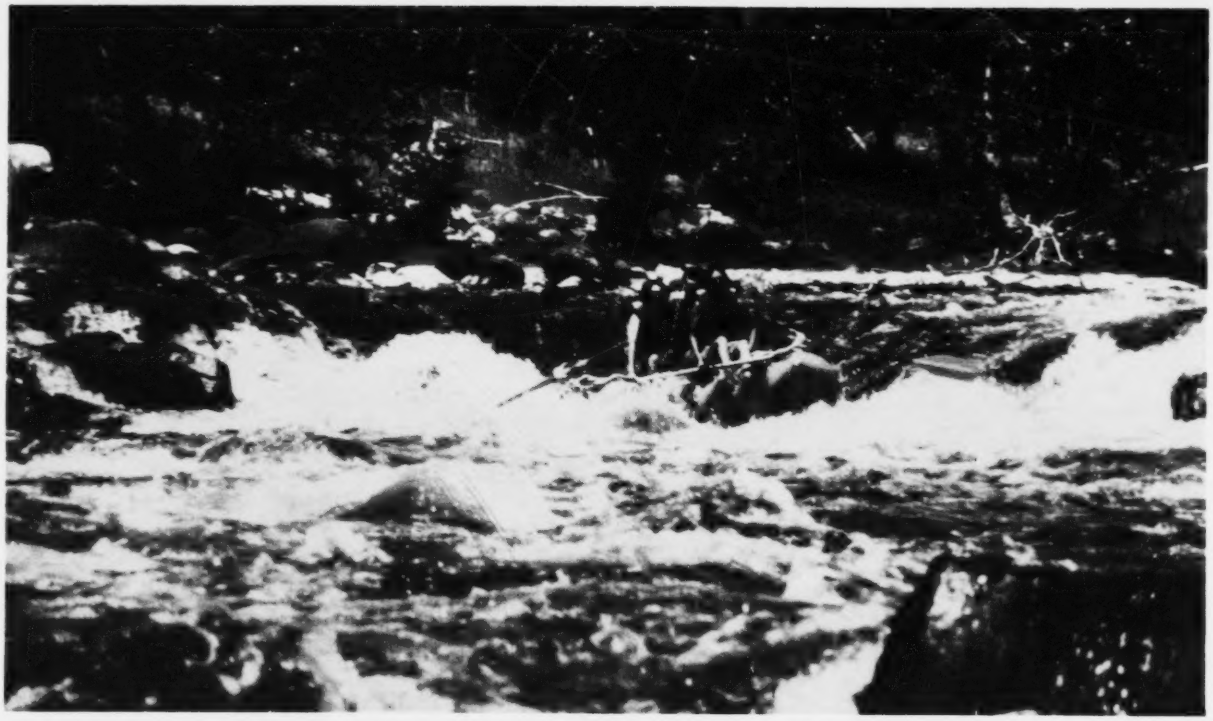
One of the unique features of the upper Klamath River is the late season whitewater boating opportunities provided as a result of year-round releases from the J.C. Boyle Dam/Powerhouse system. At least one generator must be operating to provide adequate flows for whitewater rafting. During typical summer operations, one generator operates daily generally between 4 a.m. to 4 p.m., increasing the river flow from approximately 350 to 1,500 cfs—the minimum raftable flow required in segments 2 and 3 (BLM 1989). Each July, generators are shut down for two weeks to allow maintenance on the powerhouse. During winter and spring, both generators operate, increasing the flows to 2,500 cfs or higher. Adequate flows for boating opportunities upstream from the powerhouse are available only when excess water is released from the dam (usually late winter and early spring).

The upper Klamath River offers exceptional whitewater boating opportunities downstream from the J.C. Boyle Powerhouse. There are 74 rapids in the study area below the BLM raft launch area (RM 220.1). This is more rapids than in a comparable length on most other rivers in the western United States. Rapids are given a difficulty rating of I to VI on the International Scale of River Difficulty. The rapids on the upper Klamath River can be divided into three sections based on similar river difficulty ratings, shown in table 2-6. The river in the first section, RM 220.1 to 214.3, drops 27 feet per mile creating less technical rapids (Class I-III) for novice boating opportunities.

In the second section, RM 214.3 to 209.3, the river drops 77 feet per mile creating several long, turbulent rapids that require precise, expert maneuvering and challenging whitewater skills (Class III-V). The short distance of this section, combined with the quantity and classification of rapids, provides an experience not found on other rivers in Oregon and northern California.

The lower section, RM 209.3 to 204, drops 32 feet per mile creating rapids similar to those in the first section (Class I-III) that are suitable for novice boating opportunities.

The upper Klamath, lower Klamath, and Rogue rivers are the only rivers in the region that are available year-round for whitewater boating—the upper Klamath River with Class IV-V rapids and the lower Klamath and Rogue rivers with Class III-IV rapids. Outside the region in Oregon and northern California, there are no other year-round Class IV-V rapids available. The Snake River in Oregon offers year-round Class III-IV rapids and the Trinity and South Fork American rivers in northern California offer year-



With a drop of 77 feet per mile, the second section of the river (RM 214.3 to 209.3) are continuous Class III to IV rapids.

The lower section of the river (RM 209.3 to 204) provides Class I to III rapids.

round Class III rapids. The availability of year-round rafting is dependent on controlled flows that are provided by upstream hydroelectric power projects.

Most boating use on the upper Klamath River occurs on weekends from mid-May through mid-September. Some boating use occurs during other months when flows are high. The unique whitewater boating opportunities on the upper Klamath River attract visitors from outside the region who are willing to travel long distances to experience the quality, late-season Class III-V run that is not found on other rivers.

Most of the early-season use is from private boaters, who are predominantly from within the region. Most of the late-season use is from commercial outfitters due to the lack of comparable whitewater boating opportunities elsewhere. In 1989, only six of 19 active commercial outfitters were from within the region, and several of their clients were from throughout Oregon, California, the U.S., and occasionally from outside the U.S. (Jones 1989 and Munroe 1989, pers. comm.).

Most local private boaters and commercial rafting outfitters spend one day rafting the river. Outfitters from outside the region primarily take two-day trips because the travel time involved makes it difficult to

Table 2-6. Whitewater Classification on the Upper Klamath River

River Section	Class I[1]	Class II[1]	Class III[1]	Class IV[1]	Class V[1]
RM 220.1 - RM 214.3 (Boat launch area to Caldera Rapid)	14	9	1	0	0
RM 214.3 - RM 209.3 (Caldera Rapid to state line)	1	9	13	3	2
RM 209.3 - RM 204 (State line to Upstream of Access #1)	13	7	2	0	0

[1] Rapids are given a difficulty rating of I to VI on the International Scale of River Difficulty, shown below.

CLASS I EASY
Moving water with a few riffles and small waves. Few or no obstructions.

CLASS II EASY TO MEDIUM
Rapids with waves up to three feet, and wide clear channels. Some maneuvering is required around obvious obstacles.

CLASS III MEDIUM TO MODERATELY DIFFICULT
Rapids with high irregular waves, narrow channels, rocks, and holes. Often requires complex maneuvering.

CLASS IV DIFFICULT TO VERY DIFFICULT
Long, turbulent rapids with powerful waves and holes. Many obstacles requiring precise, expert maneuvering. Scouting from shore is often necessary.

CLASS V EXTREMELY DIFFICULT
Long, technical, and very violent rapids with highly congested routes which nearly always must be scouted from shore. Dangerous drops, unstable eddies, irregular currents, and horrendous holes are often encountered. Requires experience, self-confidence, and good physical condition.

CLASS VI NEARLY IMPOSSIBLE AND EXTREMELY DANGEROUS
Difficulties of Class V carried to the extreme of navigability. Mishap could be hazardous to life. For teams of experts only, after close study and with all precautions taken. Generally considered unrunnable for commercial purposes.

Source: Headwaters Commercial Outfitters (1989 Brochure).

Table 2-7. Upper Klamath River Use Statistics for Whitewater Rafting

	1982	1983	1984	1985	1986	1987	1988
			Commercial Comparisons				
Number of Trips	170	119	141	140	135	222	247
No. of Passengers	1,560	1,130	1,184	1,217	1,751	2,163	2,621
User Days	2,623	2,132	2,144	2,072	3,484	3,375	3,957
Average Number of Passengers per Trip	9.0	9.5	8.4	8.7	13.0	9.0	11.0
One Day Trips	67	25	50	52	78	129	143
Two Day Trips	98	90	84	86	56	92	104
Three Day Trips	5	4	6	2	1	1	0
Four Day Trips	0	0	1	0	0	0	0
Permittees	68	41	22	23	30	25	23
Active Companies	27	27	20	22	20	21	20
			Private Comparisons				
Number of Trips	60	35	43	56	39	45	75
Number of Passengers	179	164	291	287	210	291	450
User Days					242	343	618

Note: Figures are shown only to depict trends in use. Use figures are lower than the actual use on the river because a self registration system was used and the table does not reflect those who did not register.

raft the entire raftable stretch in one day. For one-day trips, most experienced boaters put in at the BLM launch site (RM 220.1) and take out either at access point #1 (RM 203.7) or Copco Lake Store in California (RM 203). Occasionally the experienced boaters will start at Frain Ranch (RM 215) for a shorter, more exciting trip. Inexperienced boaters usually float either from the BLM launch site to Frain Ranch, or from the BLM take-out to Copco Lake since the rapids are not as difficult to run. The lower portion of segment 2 is very technical with almost continuous rapids, allowing very little time to view the surroundings.

Actual visitor use day (VUD) figures for boating have increased since 1982. Table 2-7 shows the last seven years of VUD for whitewater rafting. The whitewater rafting use was estimated to be 4,575 VUD in 1988. Based on BLM user counts from 1983 to 1988, use has grown on the river at a rate of 8.3% per year. This current growth is due to the growing popularity of whitewater boating, the relatively recent discovery (1980) of the upper Klamath River as an excellent whitewater resource, and the regional scarcity of comparable whitewater boating opportunities on a year-round basis. Particularly valued are the relatively scarce opportunities to run Class IV and V rapids in the middle to late summer.

Private boaters are not required to obtain a use permit; however, commercial outfitters must obtain annual special recreation permits from the BLM. BLM issued 19 special recreation permits in 1989. In previous years, there have been as many as 64 permittees, although typically not all the permittees actually used the Klamath River.

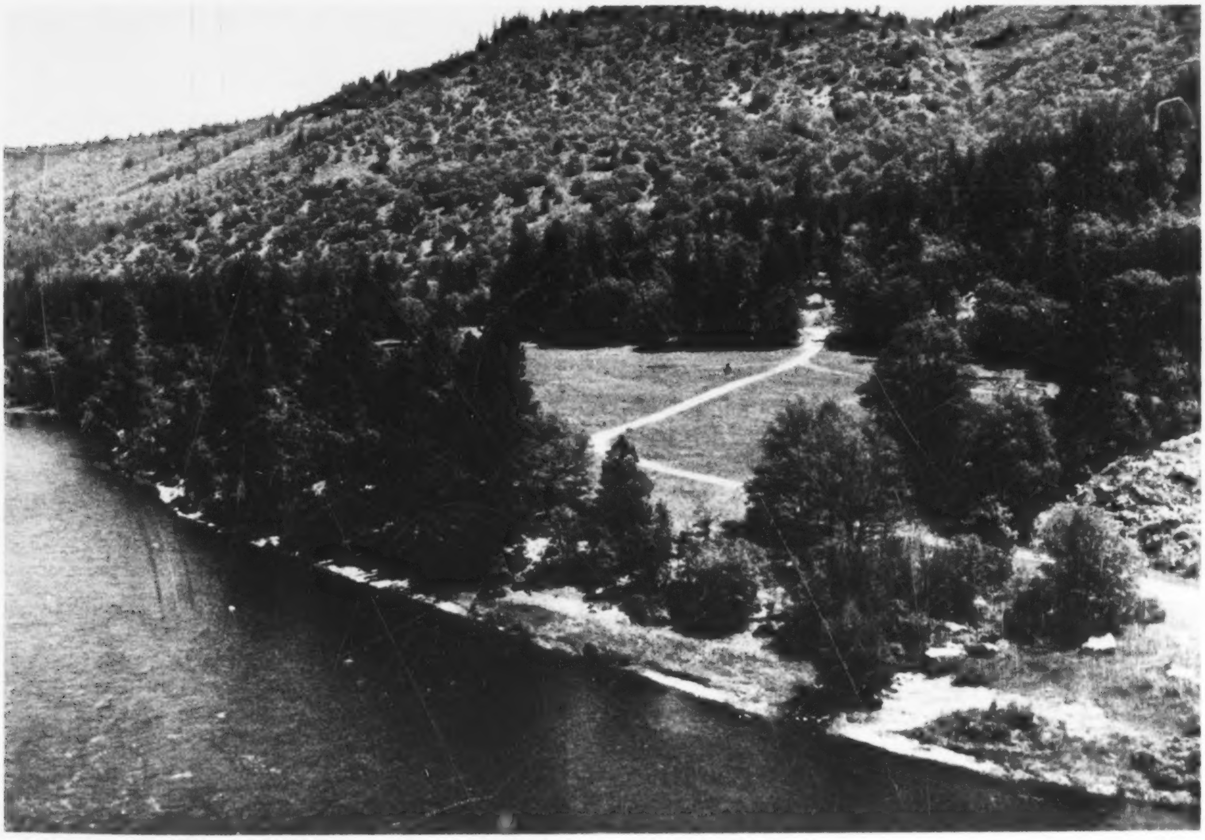
Fishing. The upper Klamath River, managed as a wild trout river in all three segments, provides an excellent trout fishery and is among the better fly fishing rivers in Oregon. The Klamath Basin provides a wide variety of angling opportunities, but only the upper Klamath River provides such an excellent catch rate for large wild rainbow trout on a major river. It is rivaled in Oregon only by the Deschutes River. Currently, the upper Klamath, Rogue, and lower Klamath are the only major rivers in the region that are open to trout angling year-round. The Pit and Trinity rivers, outside the region in California, also provide year-round trout angling opportunities.

Spring comes early to the upper Klamath River Canyon, providing the earliest angling opportunity for a river fishery in Klamath County. The majority of fishing use occurs during spring and fall. Most anglers in the canyon are residents of nearby communities, who usually come to fish for one day. The river's reputation for producing large wild rainbow trout draws anglers from outside the region who come to fish for more than one day. A 1984 creel survey (City of Klamath Falls 1986) indicated that 87% of all anglers on the upper Klamath River are from Oregon and the remaining 13% are from California.

Hunting. Hunting occurs primarily on open benches along the river and in draws along the canyon rim. Black-tailed deer, silver-gray squirrels, mountain and valley quail, chukar, and turkeys are hunted, usually on weekends during the scheduled seasons. Most hunters in the canyon are residents of nearby communities who come to hunt for one day or more. In Oregon, hunting is regulated by the Oregon Department of Fish and Wildlife (ODFW), and in California, by the California Department of Fish and Game. Accurate hunter use figures are not available at this time.

Camping. The remote Klamath River Canyon offers campers a semi-primitive experience. The opportunity for isolation from the sights and sounds of people is a characteristic feature that campers enjoy about the canyon. Camping occurs either at Frain Ranch, on BLM designated sites, or on upland benches along the roads, usually by commercial whitewater boaters and anglers in the summer. Most outfitters providing two day trips camp either at Frain Ranch or upstream on BLM designated sites. These sites provide the last streamside access with open benches for camping before entering the long, steep, rugged, and narrow section of river. Support vehicles can drive to these areas and establish camp, which contributes to a safer raft trip with less weight in the rafts. Some camping occurs in the spring and fall, primarily by those who are hunting and fishing.

Recreation Sites and Facilities. Public recreation sites and facilities are scattered throughout the study area (map 2-3). A BLM raft launch facility with toilet, message board, and registration drop box is at RM 220.1, approximately 1/4-mile below the J.C. Boyle Powerhouse. No overnight parking is allowed. Ap-



The Frain Ranch, with open, flat terrain and river access makes it attractive for camping.

proximately three miles below the boat launch area are two semi-primitive campsites with tables and fire pits. Six additional fire-safe sites are available along the river's edge down to approximately RM 216. There are several primitive campsites at Frain Ranch. No recreational access or facilities are provided from approximately RM 214.3 to the Oregon-California state line. A BLM raft take-out area and two toilets are provided at RM 209.1, just downstream of the state line. Fishing access on private land is provided by PP&L through five gated entrances along Topsy Road in segment 3 with parking space, toilets, and message boards.

Wildlife

The diverse plant communities found in the upper Klamath River Canyon provides for a great variety of wildlife habitats and wildlife species. Historical use of the upper Klamath River Canyon included timber harvesting, livestock production, and homesteading; the canyon was also used as a major travel route. Despite this historical use and the current hydroelectric developments and recreation activities, the canyon remains relatively remote and undisturbed and with the surrounding sparsely settled forests and rangelands provides the habitat quality needed by the many species of wildlife found in and around the canyon.

The diverse terrestrial habitat within the study area supports a large number of wildlife species. In addition, there are many other species of wildlife found in the surrounding environment that either reside within the study area or use canyon habitat to some extent, including at least 98 birds, 28 mammals, and 15 reptiles and amphibians (herptiles) (appendix B).

Birds. Of the 98 known species of birds within the study area, some nest and reside year-round and others are seasonal or migratory. There are at least 16 known species of raptors, 8 species of waterfowl, 8 upland gamebirds, and 66 non-game birds.

Because the Klamath River Canyon cuts across the Cascades, it is a natural migration corridor. The extensive rimrock, cliffs, and large pines in the canyon provide an abundance of nesting substrate for raptors. Osprey, bald eagle, prairie falcon, and American kestrel are known to nest in the canyon.

The fish inhabiting the Klamath River provide a good prey base for bald eagles and osprey that forage in the canyon. At least one pair of bald eagles (Federal and Oregon State listed threatened, California State listed endangered) may be year-round residents of the canyon. This pair has nested in the canyon each year since 1979 (Isaacs and Anthony 1988). The nest is located within segment 2, approximately 1,500 feet from the river. Another pair nests outside the study area, 1.8 miles from the J.C. Boyle Dam, and likely forages in J.C. Boyle Reservoir and in segments 1 and 2. This nesting pair was discovered in 1983 and has continued to nest in the vicinity. Both pairs nested in 1989. Migrating and wintering bald eagles are also found in the canyon.

Ospreys nest in the study area and generally use the tops of large snags or live trees adjacent to the river for nest and perch sites. These birds are commonly seen foraging up and down the river. At least one pair has nested in recent years, including 1989, at one of two known nest sites adjacent to the river within segment 2. Another nest is located next to the river about 1/4-mile downstream of the study area in segment 3.

Osprey nest in segment 2.

Cliff habitat is important raptor among nesting substrate.

Six known prairie falcon nest sites occur in the study area, one in segment 1 and the remainder in segment 2. In segment 2 one nest site is located on a cliff ledge 35-45 feet directly above the river, the others are on cliffs away from the river below the rim. Surveys done in 1984 and 1985 by the City of Klamath Falls (1986) show that a maximum of four of these were occupied; nesting density was estimated at four nests per ten miles. Although nesting wasn't confirmed, field observations by BLM in 1989 showed two pairs present and exhibiting nesting behavior at two nest sites in segment 2.

American kestrels, commonly found in summer, are known to nest in the study area. A survey by the City of Klamath Falls (1986) showed at least four pairs of nesting kestrels.

Other raptors found in the study area include the red-tailed hawk, sharp-shinned hawk, Coopers hawk, great horned owl, long-eared owl, and western screech owl. The Northern goshawk and northern pygmy owl are two Oregon State sensitive species that exist in the study area and potentially nest in or near the canyon. Golden eagles are commonly seen foraging in the canyon and are known to nest near the study area.

The peregrine falcon, a Federal and Oregon and California State listed endangered species, historically nested in the canyon, but nesting has not been known to occur since the early 1970's. Peregrines are known to winter in the canyon and sightings have increased in the last few years (Opp 1989, pers. comm.). The most recent sighting occurred at the J.C. Boyle Reservoir on August 5, 1989, where one adult peregrine was seen. One historic nest site is in segment 2 and another is located a few miles south of the canyon in California, near segment 3. Recovery efforts in California and Oregon are increasing as evidenced by the 1989 nesting season where 14 peregrine eyries are known to occur within a 100-mile radius of the study area out of a total of 29 known eyries in southern Oregon and northern California (Page 1989, pers. comm.). The potential exists for peregrines to reoccupy historic nest sites or even new sites in the study area as the species continues to recover. Because of the abundant prey base, use as a peregrine migration corridor, and the abundance of suitable falcon nesting habitat, the canyon has been considered as a potential hack site for reintroducing peregrines (USFWS 1989). Because of the presence of nesting prairie falcons, cross fostering with peregrine falcons is another potential strategy. A large area in southern Oregon and northern California, including the study area, was designated in 1982 as a management area for the recovery of the peregrine falcon (Pacific Coast American Peregrine Falcon Recovery Team). In its current management framework plan, the BLM has designated a portion of the cliffs in segment 1 as protected habitat for falcons (map 2-6).

Wet meadows adjacent to slow moving portions of the river provide feeding, resting, and nesting habitat for several species of waterfowl. Canada geese, wood ducks, and common mergansers are known to nest, and mallard, cinnamon teal, and Barrow's goldeneye, potentially nest along the river. Barrows goldeneye is listed as a taxa of concern in Oregon (Oregon Natural Heritage Database 1989). Tundra swans and green-wing teal also use river habitat. The many small minnow-like fish found in the river provide a food source for the double-crested cormorant, a bird that is common throughout the canyon.

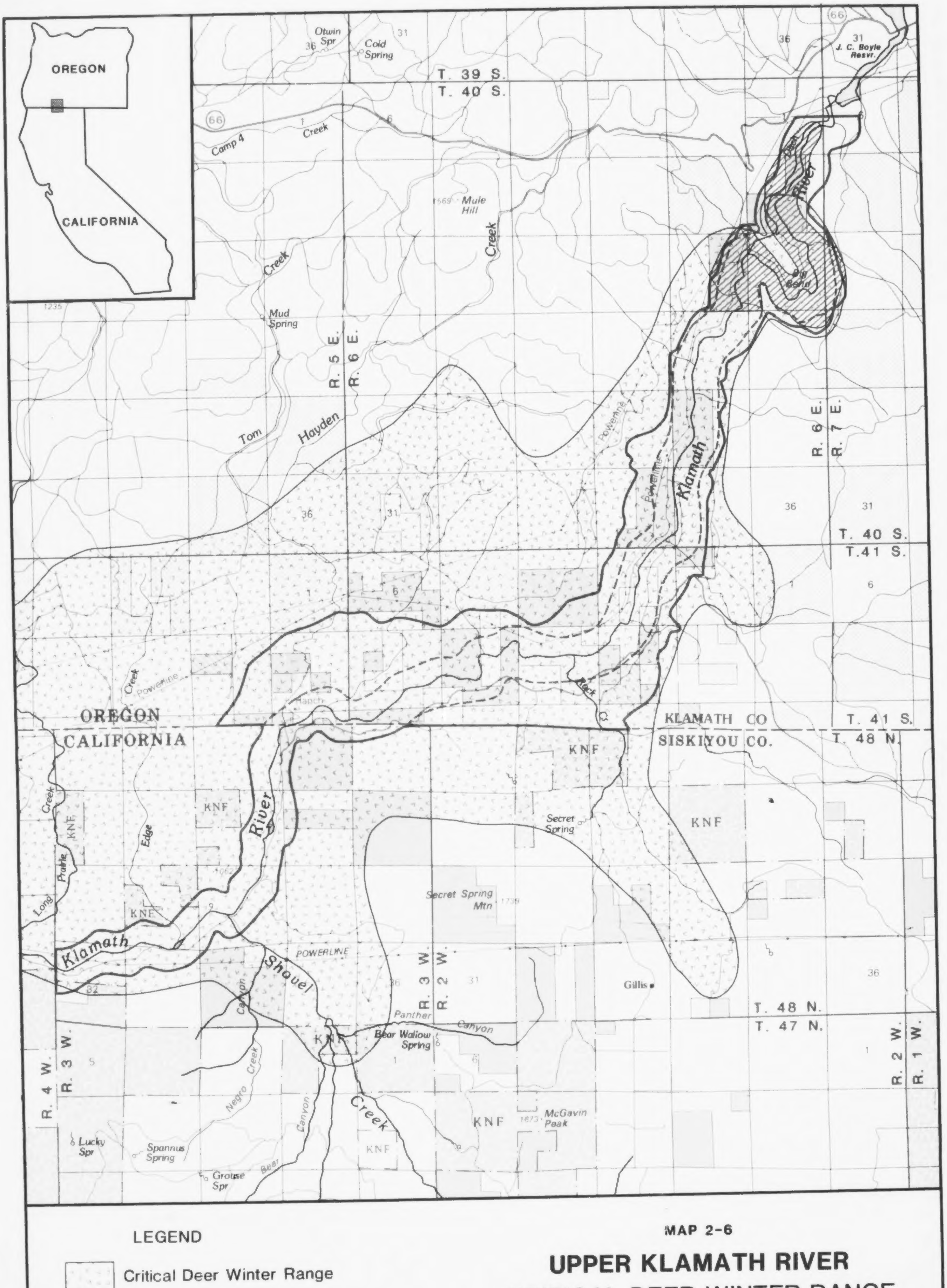
Meadows, oak grasslands, and dense brush are important habitats for feeding and brood rearing of upland gamebirds such as California and mountain quail, wild turkey, and chukar. The latter two were introduced into the canyon in the 1950's and 60's. Red-legged partridge, a species similar in appearance and related to chukar, were introduced into the canyon by the ODFW in the spring of 1989. Although ruffed grouse historically inhabited the study area, no recent sighting records exist. This grouse may be present in areas that contain moist woody vegetation near springs and seeps or areas near the few aspen stands found in the canyon. This type of habitat is very limited within the canyon and likely limits the presence of ruffed grouse. The abundant oaks found in the study area are important to turkeys by providing acorns—a crucial food source. Turkeys also prefer wooded meadows adjacent to the river. Blue grouse, mourning dove, and band-tailed pigeons are also present in the study area. All of the gamebirds found in the study area, except the band-tail pigeon and mourning dove, are permanent residents and are open to hunting during hunting season.

A great variety of non-game birds inhabit the study area. The diverse plant communities in the canyon provide important nesting, foraging, and wintering habitat to many birds. Robins, juncos, chickadees, and two Oregon State sensitive species—western bluebirds and acorn woodpeckers—winter in the canyon in large numbers. These and other non-game birds provide a significant prey base for raptors and predatory mammals. Other State sensitive species inhabiting the study area are Lewis' and pileated woodpeckers (Oregon sensitive), and the bank swallow (Oregon sensitive and California threatened). Most of these species also nest within the study area. The Western yellow-billed cuckoo potentially occurs in the canyon. This Federally listed Subcategory 3B and Oregon State sensitive and California State threatened bird inhabits riparian areas found in interior valleys west of the canyon but has been sighted in the past throughout eastern Oregon and may occur in the study area, although its presence hasn't been documented (Littlefield 1988). Vaux's swift, listed on the 1989 Oregon Natural Heritage Database Review/ Watch List, is common in the study area.

Mammals. The canyon provides the habitat to support a great variety and abundance of mammals. Silver gray squirrels, an important game species in the canyon, are plentiful as are other small mammals such as bats, rabbits, chipmunks, ground squirrels, deer mice, shrews, and other small rodents, providing an abundant prey base for the many mammalian and avian predators. Beaver and muskrat, two small mammals dependent on aquatic habitat, are commonly found along the river. Townsend's big-eared bat, a Federal candidate (Category 2) and Oregon State sensitive species, is found in segment 2. A maternity (birthing) colony of these bats was discovered by a BLM biologist in 1988. There are only five known maternity colonies in the region.

Several species of predators in the canyon, including bobcat, raccoon, river otter, mink, long and short-tailed weasels, fisher, and ringtails, are dependent upon riverine habitat and prey. Both the fisher and ringtail are Oregon State sensitive species. The ringtail, a small, slender relative of the raccoon, is rare in southern Oregon and northern California; Klamath County is the eastern limit of their range in Oregon. Larger predatory mammals inhabiting the study area include coyote and gray fox. The wolverine, an Oregon and California State threatened and Federal candidate species (Category 2), hasn't been seen in the study area but has been documented nearby and probably uses the canyon as a travel corridor (Opp 1989, pers. comm.).

Big game mammals that occur within the study area include black-tailed deer, Roosevelt elk, black bear, and cougar. Although black bear and cougar are uncommon, they either reside or pass through the canyon. A migratory herd of 3,100 black-tailed deer (estimated 1988-89 population) inhabit the area around the canyon. The summer range of this herd extends from Siskiyou County in California to Crater Lake. The majority of this herd winters in and around the study area. The upper Klamath River Canyon has been designated as critical deer winter range


OREGON
CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
J. C. Boyle Resvr.
66
Camp 4 Creek
Mule Hill
Creek
Mud Spring
Tom Hayden Creek
R. 5 E.
R. 6 E.
R. 6 E.
R. 7 E.
Big Bend
River
Klamath
Powerline
T. 40 S.
T.41 S.
Rock Cr
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Long Prairie Creek
Edge
River
Klamath
Secret Spring
Secret Spring Mtn
POWERLINE
Shovel
Canyon
R. 3 W.
R. 2 W.
Gillis
T. 48 N.
T. 47 N.
Panther Canyon
Bear Wallow Spring
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
Negro Creek
Canyon
Creek
McGavin Peak
Lucky Spr
Spannus Spring
Grouse Spr
Bear

LEGEND

- ░ Critical Deer Winter Range
- ▨ BLM Designated Falcon Habitat

N

MAP 2-6

UPPER KLAMATH RIVER
CRITICAL DEER WINTER RANGE
AND
FALCON HABITAT

1989

1 0 1 2 3 Miles

(map 2-6) by both the BLM and the ODFW. This is primarily due to the low elevation, which gives rise to light to snow-free conditions during severe winters, providing accessible forage, easier movement, good thermal cover, and early spring greenup that furnishes critically needed forage for deer coming off of a hard winter. A small portion of this black-tail deer herd are year-round residents of the study area. Springs and wet areas with riparian cover are important fawning habitat for these resident deer.

The forested areas in the canyon along with the meadows around the Frain Ranch area provide elk with suitable habitat, and they are occasionally seen in these areas in the spring and early summer. Although it is not their primary wintering area, elk do use the canyon in winter, particularly during severe winters. The elk herd was estimated at 50 animals in 1988-89 and is predicted to increase. The size of the herd's range and the importance of habitat in the canyon is expected to increase as well (Opp 1989, pers. comm.).

Herptiles. A variety of reptiles and amphibians are found in and around the study area; a total of 28 species potentially occur within the study area. Talus slopes and rocky hillsides provide good habitat for lizards and den sites for snakes, while amphibians inhabit moist sites around seeps and springs and along the river. Snakes found within the canyon include western rattlesnake, ringneck snake, common and western garter snake, gopher snake, and western racer. Common lizards include fence lizard, alligator lizard, sagebrush lizard, and western skink; amphibians of note include long-toed salamander, western toad, and Pacific tree frog. Two Oregon State sensitive species found in the study area are the California mountain kingsnake and Western pond turtle, the latter also a Federal candidate (Category 2) species. Species that potentially occur but haven't been documented as present in the study area include Pacific giant salamander, roughskin newt, ensatina, black salamander (listed as a taxa of concern in 1989, Oregon Natural Heritage Database), Great Basin spadefoot toad, striped whipsnake, western aquatic garter snake, northwestern garter snake, and night snake; and four Oregon State sensitive species—tailed frog, western spotted frog, sharptail snake, and short-horned lizard (St. John 1987).

Fish

The study portion of the Klamath River is inhabited by a diverse assemblage of fish species; at least 15 known native and introduced species occur within the study area (appendix C). Historically the river was a passageway for anadromous fish (chinook salmon and steelhead) as they migrated to various tributaries of the Klamath River and Upper Klamath Lake. These fish runs were halted by the construction of Copco I Dam in 1918, which permanently blocked fish passage. Subsequent to this, three more dams were built on the upper Klamath River—Copco II and Irongate in California, and J.C. Boyle in Oregon, completed in 1925, 1938, and 1958, respectively (map 1-1). Although located outside the study area, two other dams affect fish migration on the Klamath River—Keno Dam located 8.5 miles above the J.C. Boyle Dam and the Link River Dam at the outlet of Upper Klamath Lake. Boyle, Keno, and Link River dams all have fish ladders to facilitate fish migration.

Rainbow trout are the primary game fish inhabiting the study portion of the river. The Klamath River from the Keno Dam downstream to the state line was designated in 1978 as a wild rainbow trout stream by the ODFW and is one of only six rivers in Oregon managed for wild rainbow trout. Segment 3, designated a wild rainbow trout area in 1974, is managed by the California Department of Fish and Game.

In addition to State designation, the concern and importance of this wild rainbow trout fishery has been acknowledged by public and private concerns, and by State and Federal government agencies:

- the National Park Service, in its Nationwide Rivers Inventory, recognized the "excellent trout fishery" of the Klamath River;

- the Northwest Power Planning Council designated the upper Klamath River as a Protected Area to protect the resident rainbow trout population;

- the Pacific Northwest Rivers Study for Oregon gave their highest resource value rating based on the wild trout population;

- the Oregon Parks and Recreation Division stated that the wild trout fishery was an attribute they felt led voters to pass a ballot measure in November 1988 designating the Klamath River as a State Scenic Waterway;

- the Oregon Department of Fish and Wildlife chose the wild rainbow populations of the Klamath Basin, specifically those of the Klamath River, as the first of many in the state to be studied to better understand how stocks of wild trout have adapted to their particular environments.

Wild rainbow trout of the Klamath River are a highly productive, self-sustaining population that spawn naturally in the wild. Studies done by the City of Klamath Falls (1986) estimated rainbow populations

(≥7.8 inches long) between the J.C. Boyle Powerhouse and the Frain Ranch area (RM 214) at 890 fish per mile, and between RM 214 and 210 at 1,911 fish per mile. These population estimates are comparable to a similar river managed for wild rainbow trout and noted as one of the most productive streams in Oregon—the lower Deschutes River—where the wild rainbow trout population was estimated at 1,500 per mile (Griggs 1989, pers. comm.).

Although some spawning habitat is found in segment 1, segments 2 and 3 have little or no spawning habitat for trout. Most adults migrate to either Spencer Creek or Shovel Creek to spawn. Spencer Creek, the primary spawning tributary for trout in the upper reaches of the river, empties into J.C. Boyle Reservoir. Trout migrating to Spencer Creek must pass over a fish ladder at the J.C. Boyle Dam. Shovel Creek, three miles downstream from the state line is the primary spawning tributary for trout in the lower reaches of the river. Klamath River rainbow trout spawn from early March through May, and juvenile fish begin to migrate into the river from spring through fall (Fortune 1989, pers. comm.). After the high spring flows have dropped off, the flow is relatively stable in segment+1 from summer through winter. This reach of the river is an important rearing area for trout in their first year of life.

The Klamath River produces an immense quantity of aquatic invertebrates. The abundance of these aquatic insects—caddisflies, mayflies, and stoneflies—in the river provide a primary food source for trout. Crayfish are abundant and are also an important part of the trout's diet.

Klamath River wild rainbows are genetically unique in that they have characteristics resistant to adversities inherent in waters of the Klamath—not only are they are highly resistant to a protozoan parasite, but they are also able to withstand high water temperatures and periodically high pH values (Buchanan 1989, pers. comm.). Although other Oregon river systems contain native rainbow trout that are resistant to high water temperatures and the protozoan parasite, non-native strains of rainbows historically introduced into the Klamath apparently were not able to reproduce due to their susceptibility to the parasite (Buchanan 1989, pers. comm.). Klamath River rainbows confront other problems including low summertime flows, high summertime water temperatures and concurrent decreasing water quality, lack of spawning gravel, cyclic water fluctuations from power generation, and competition from non-native warmwater fish. Despite these problems, Klamath River rainbows have been able to reproduce and sustain a productive fishery that is popular and has high catch rates of trout up to 20 inches.

The study portion of the Klamath River in Oregon is managed as a catch and release fishery from June to September and is open to a limited catch the remainder of the year. The palatability of the trout meat decreases as a result of the poor water quality conditions that occur at this time of the year, primarily due to the high water temperatures and high algae content from the massive blooms in upstream reservoirs.

Two Federal and Oregon and California State listed endangered species, the Lost River and shortnose suckers, occur in the study area (Buchanan 1989, pers. comm.). The Lost River suckers, or "mullet", once an important food staple for local Indians, were at one time abundant in Klamath Basin lakes and streams, migrating by the thousands to spawn in tributaries of Upper Klamath Lake. Lost River and shortnose suckers typically inhabit lakes and migrate into tributaries to spawn. The Lost River and shortnose sucker are found in J.C. Boyle Reservoir, Copco Reservoir, and in segment 3. Although they haven't been found in segments 1 and 2, it is very probable that these two endangered species enter this part of the river when they are washed over J.C. Boyle Dam during high flows.

Other native species found in the river include Klamath smallscale sucker, blue and tui chub, marbled sculpin, and Pacific lamprey. The Klamath largescale sucker (Federal candidate, Category 2 species), has been found in J.C. Boyle Reservoir and potentially occurs in the study area. Several introduced minnow-type species occur in the river. Although not documented, there have been at least two reports of white sturgeon in the study area. White sturgeon were planted in Upper Klamath Lake in the 1950's. Brown trout, planted in Copco Reservoir, inhabit and migrate through segment 3 to spawn in Shovel Creek. A cooperative effort between California Department of Fish and Game and a private organization exists to raise and plant native stocks of rainbow trout into Shovel Creek.

Cultural

Cultural resources within the study area are divided into two categories, prehistoric resources and historic resources. Prehistoric resources are associated with Native Americans that date before the time of contact with European settlers (AD 1850). Information about these resources are recovered through archaeological investigations. Historic resources date after AD 1850 and are more than fifty years old. In the study area they are associated with early stagecoach and freight travel, early ranching activities, logging activities, and in one case, sacred use by Native Americans. There are no known cultural resources in the study area between the J.C. Boyle Dam and Powerhouse.

Prehistoric. Archaeological surveys, excavations, and artifact analyses have been conducted within the study area over the last 28 years. Initial investigations by the University of Oregon in the early 1960's were prompted by the construction of the J.C. Boyle Powerhouse and Dam. As part of the proposed Salt Caves hydroelectric project, the City of Klamath Falls (1984-1986) surveyed land and test excavated 20 sites within the study area. In 1989, 750 acres of BLM-administered land in the study area were surveyed (Class III - Intensive Field Inventory) by the BLM. The BLM also initiated a contract in 1989, in which artifacts recovered in the past 10 years from sites in the canyon were integrated and consolidated, with material recovered in the 1960's, into a single, cohesive framework (Mack 1983) for planning and management purposes. Surveys, excavations, and analyses have provided information about prehistoric use of the study area; however, problem-oriented research will yield more in-depth details about prehistoric activities in the canyon.

Forty-four prehistoric sites have been located in the upper Klamath River Canyon (appendix D). These sites consist of pit house villages, stone rings, lithic scatters, burial sites, a quarry site, and a rock shelter. The wide variety of known sites present within the river corridor demonstrate intensive prehistoric use of the canyon by Native Americans. Use of the canyon by Native Americans dates back to at least 5000 BC; however, archaeological data (radiocarbon dates, time-sensitive projectile points, and pottery) indicates that most of the sites within the study area were occupied from AD 250 to AD 1800—Late Prehistoric Period (Mack 1989). The riverine environment with its wide diversity of plants and animals, the river as a trade and communication corridor, and the relatively mild winter climate of the river are just a few of the factors which explain the concentration of prehistoric sites within the study area.

The diversity of sites in the canyon and archaeological evidence of the prehistoric diet indicate that the upper Klamath River Canyon was occupied year-round from at least AD 900 until approximately AD 1800 (Mack 1989). The presence of fishing, gathering and hunting camps, pit house villages, and the wide diversity of plant and animal resources in the canyon allowed year-round use of the canyon, rather than only seasonal use as is common for most of the riverine areas of the region. The ability to occupy a river corridor on a year-round basis is an uncommon occurrence in this region, where the distribution of plant and animal resources is usually over a wide area, necessitating the seasonal movement of people from place to place. Using ethnographic accounts (Silver 1978), the pit house villages have been interpreted as winter villages, while the lithic scatters (concentrations of flaked stone debris and tools) are viewed as fishing, gathering, or hunting camps—depending on location—used in the spring, summer, and fall. Archaeological analysis has shown that the prehistoric diet included the use of fish, acorns, large and small mammals, turtles, birds, and various plants.

Due to the biological diversity of the canyon, these resources were readily available within the study area during different seasons of the year—anadromous fish in the spring and late summer; turtles in the spring, summer, and fall; acorns in the fall; and large game being taken primarily in the fall (Mack 1983). In addition to the sites found within the canyon, sites that are easily accessible from the canyon have been found in areas where roots, seeds, and berries are available. These sites show that resource areas adjacent to the canyon were also used prehistorically as a way to increase and supplement the Native American subsistence base.

Ethnographic accounts (Silver 1978, Spier 1930, Kroeber 1925) and artifacts recovered from sites within the study area indicate that the area was used by a variety of cultural groups at different times. These groups have been identified as the Shasta Indians of northern California, the Modoc and Klamath Tribes of the Klamath Basin, the Takelma of the upper Rogue River, and possibly the Pit River Indians of northeastern California. Common to all of these tribes was the use of winter pit house villages, hunting and fishing camps, and a subsistence pattern in which anadromous fish, acorns (where available), large and small mammals, and various plants were major parts of their diet.

Cultural differences between these tribes were greatly dependent upon their geographic position and upon the influences of tribes from outside of this region. These cultural differences resulted in the use of distinctive artifacts, such as projectile points, groundstone, and pottery, by each tribe. Pottery recovered at site 35KL16 suggests that this site was occupied by the Takelma, prior to its use by the Shasta. Burials and flaked stone tools show that some of the sites within the southern portion of the canyon were used by the Shasta. Projectile point types also indicate that the Modoc, Klamath, and possibly the Pit River Indians used sites within the canyon. The wide range of artifacts from sites in the study area shows that use of the canyon by different tribes changed over the last 2,000 years. This is important because it shows that territorial boundaries between the different tribes using the canyon did not remain the same through time (an assumption often made about the boundaries of prehistoric culture areas), but changed as each group expanded or decreased its tribal area.

Archaeological research over the last three decades in the upper Klamath River Canyon has provided information concerning prehistoric use of the canyon, as well as in the region. Excavations at ten of the pit house village sites have yielded information about the prehistoric diet, burial practices, architectural features, and aspects of tool manufacturing and use. Several of these sites are very large and, with problem-oriented research, should provide more detailed information about prehistoric use of the canyon than is available at present. Tribal boundary fluctuations, trade of raw material and finished products, and a greater understanding of the early use of the canyon are just a few of the research questions that could be pursued by additional research in the canyon. The availability of additional archaeological data from sites within the canyon make several of the sites eligible for nomination to the National Register of Historic Places. Sites are eligible for nomination to the National Register if they have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4d).

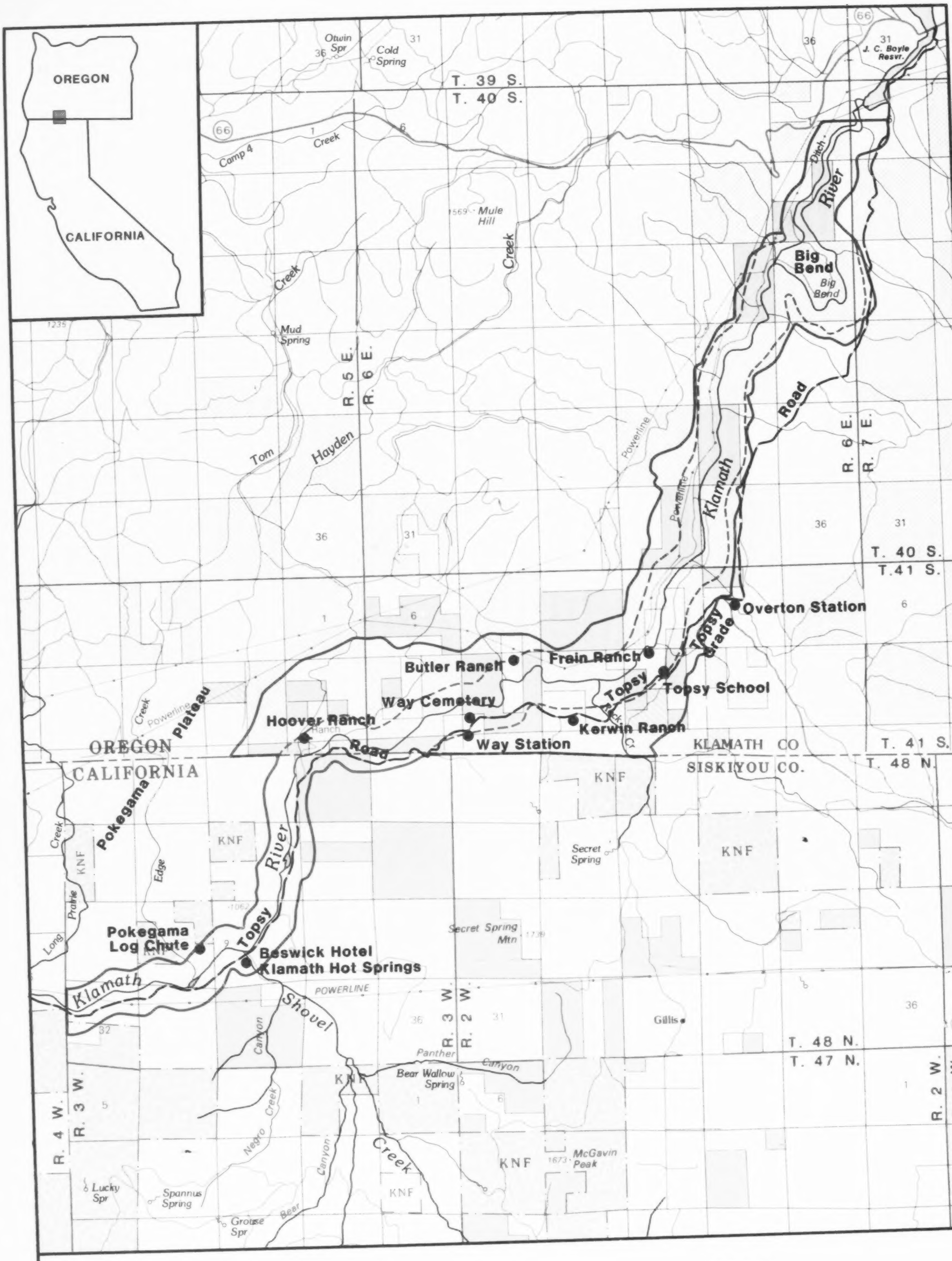
Historical. The upper Klamath River Canyon has been used extensively by Europeans since the 1850's. The terraces and floodplains along the river and several meadow areas above the river were excellent locations for agricultural and ranching activities. These areas were the focus of European settlers in the canyon, however, the river itself was used to transport logs to mills downstream. Native Americans continued to use the canyon, but their activities were not as prevalent as in prehistoric times.

The earliest European explorers in the vicinity of the study area were members of Peter Skene Ogden's Hudson Bay Company expedition of 1826-27. In their search for fur-bearing animals in southern Oregon, Ogden's party traveled along the western canyon rim (within the study area). Unable to access the river because of the steep canyon wall, the explorers left the canyon rim near RM 222.5. Traveling southwest across the Pokegama plateau (the area north of the river) the party again reached the river near Copco Reservoir and continued westward through the Cascade Range (LaLande 1983). Thirty years later Mart Frain, a noteworthy local figure, followed the river northward from the mining town of Yreka, California to the Klamath Basin. Upon reaching the Klamath Basin, Frain began the first trade with local Native Americans. While exploring the southern Cascade Range in the summer of 1888, a prominent regional preservationist, Judge John B. Waldo, and his party travelled through the study area. Journeying northward from Mt. Shasta, the expedition party stayed overnight at the Beswick Resort and Klamath Hot Springs (map 2-7) before continuing up the river to Keno, Oregon (LaLande 1989).

A prominent historical landmark of the study area is a stagecoach/freight road known as the Topsy Road, which parallels the river for 11.4 miles (6.3 miles in segment 3 and 5.1 miles in segment 2) on the south and east side of the river. Bisecting the Cascade Range, this road was officially opened for wagon and stage travel between Yreka, to the southwest, and the Klamath Basin, to the northeast, in 1875. However, as early as 1865, freight for Fort Klamath was carried up the river canyon along a route closely approximating Topsy Road. From 1875 to the early 1900's, when the road to Ashland, Oregon was improved and the railroad reached Klamath Falls, Topsy Road provided the only year-round access to Klamath Falls and to towns east of the Klamath Basin.

Topsy Road underwent three construction periods—initial construction from 1874 to 1875; a second construction period in 1887, when the steepness of the grade was lessened; and the final period of construction in 1890 when Topsy Road and Topsy Grade (where the road cuts into a vertical basalt face) acquired their existing locations. Providing reliable access during inclement weather between towns west of the Cascade Range and towns on the east side, mail was first carried along this route in 1876. In 1887 all mail to Klamath Falls and towns to the east were routed along Topsy Road. Freight wagons came from Ager, California supplying goods to the Klamath Basin, Fort Klamath, the Klamath Indian Agency, and merchants in Klamath Falls. Stagecoach travel along Topsy Road occurred daily with an overnight stop at the Beswick Hotel and Klamath Hot Springs in segment 3 (map 2-7), and livery stops at the Way Station Ranch (1/2-mile north of the state line in segment 2) and Overton Station, which is above Topsy Grade.

Topsy Grade on historic Topsy Road.


OREGON
CALIFORNIA
J. C. Boyle Resvr.
Big Bend
River
Ditch
Road
Klamath
Powerline
Overton Station
Topsy Grade
Topsy School
Frain Ranch
Butler Ranch
Way Cemetery
Kerwin Ranch
Hoover Ranch
Way Station
Topsy Road
KLAMATH CO
SISKIYOU CO.
OREGON
CALIFORNIA
Pokegama Plateau
Pokegama Log Chute
Beswick Hotel
Klamath Hot Springs
Topsy River
Klamath
Shovel Creek
Secret Spring
Secret Spring Mtn
Gillis
Mule Hill
Tom Hayden Creek
Mud Spring
Camp 4 Creek
Cold Spring
Otwin Spr
Bear Wallow Spring
Panther Canyon
McGavin Peak
Negro Creek
Lucky Spr
Spannus Spring
Grouse Spr
Long Prairie Creek
Edge
POWERLINE
KNF
T. 39 S.
T. 40 S.
T. 41 S.
T. 48 N.
T. 47 N.
R. 5 E.
R. 6 E.
R. 7 E.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
66

LEGEND

● Historic Sites

— — Topsy Road

N

MAP 2-7

UPPER KLAMATH RIVER

HISTORIC SITES

1989

1 0 1 2 3 Miles

Even with the construction of a reliable road from Ashland, Oregon, and access by railroad, traffic continued on Topsy Road after the early 1900's.

The Beswick Hotel and Klamath Hot Springs complex in segment 3 provided a popular overnight stop for the stage passengers and freight drivers, as well as a vacation resort/health spa. The resort had a hotel, post office, store, saloon, swimming pool, restorative hot springs, dance pavilion, stables, and living quarters for employees. In its heyday as a famous spa, the hot springs were visited by such noted guests as President Herbert Hoover, author Zane Gray, and pilot Amelia Earhart. The first Beswick Hotel, constructed around 1870, is still standing. A second hotel, built in 1887 was destroyed by fire in 1915. Stones from the second hotel were used to construct a dance pavilion around 1920; this, too, was destroyed by fire. The post office, store, and saloon, all housed within the same building; swimming pool; stables; and living quarters for the resort employees are still standing today and are visible from the road and river.

Way Station, a livery stable and log cabin, associated with travel on Topsy Road is still standing. The location of Overton Station, another livery stop, is marked by several poplar trees above Topsy Grade. Two additional historic ranch sites found along Topsy Road are the Kerwin Ranch, where the foundations and apple orchard are still visible, and the Frain Ranch, purchased by Mart Frain in 1888 and deeded to his three sons in 1893. The Frain Ranch contains the visible remains of a log cabin, root cellar, barn, and garage. The orchard, pasture lands, and the log cabin are visible from the river. A pioneer cemetery, the Way Cemetery, is located off Topsy Road and contains the graves of Mart Frain and members of the Way, Ward, Overton, and Hoover families (all early ranching families). Topsy School, located at the foot of Topsy Grade, was attended by children of the nearby ranches and logging camps. All located within segment 2, these historic sites have had brief, descriptive, historical markers placed near them by the local historical society. Two other historic ranches within segment 2, the Hoover and Butler ranches, are on the west side of the river.

In addition to being a communication and travel corridor for towns east of the Cascade Range, the upper Klamath River played a major role in the logging operations of the area in the 1890's. A major feature of these logging activities was a wooden log chute, known as the Pokegama log chute, that was cut into the western canyon wall in segment 3 (map 2-7) and put into operation in 1892. Logs were brought from the Pokegama plateau by train and unloaded at the top of the chute. After coming down the chute, logs floated down the river to the mill at the town of Klamathon. At the height of its operation, 300 logs per day were carried down the 2,000-foot chute and over 110 men were employed along the river to facilitate movement of the logs downstream. Today the only reminder of the log chute is a cut at the top of the canyon rim and a scar where the chute cut through the hillside, which are both visible from the river and Topsy Road. Two other logging operations, located in segment 2 below Topsy Grade and at the Kerwin Ranch, also used the river to float their logs to the mill.

Historic use of the study area was not limited solely to European activities. Native Americans continued to use sites within the canyon for subsistence and religious activities. Ethnographic investigations in association with archaeological research (City of Klamath Falls 1985) have identified use of a prehistoric village site (CA SIS 1198) for religious ceremonies associated with the 1870 Ghost Dance, a Native American religious cult which first developed in the early 1870's on the Great Plains and then spread to tribes in the west. Ceremonies were conducted so the deceased would return to the earth and help the living Native Americans regain control of their destiny. It appears that this religious doctrine was transmitted from the Klamath Tribe, down the Klamath River, to the northern California tribes (Spier 1927). This Ghost Dance site was probably part of this southward spread of the religion.

Scenic

The visual quality of a landscape is based on landscape character. The stronger the influence of form, line, color, and texture, the more interesting the landscape; the more visual variety in a landscape, the more aesthetically pleasing it is. An assessment of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications is used to classify the scenic quality of the area. A Visual Resource Management (VRM) Class rating is then made to manage the quality of the visual environment and to reduce the visual impact of development activities (BLM Handbook H-8410-1).

The upper Klamath River Canyon was evaluated by the BLM in 1977 and 1981. Segments 1, 2, and 3 received a Scenic Quality Class A evaluation—the highest scenic quality classification. Based on this classification, the area was then classified as VRM Class II. The Class II management objective is to retain the existing character of the landscape. Management activities in VRM Class II areas should not attract the attention of the casual observer. The upper Klamath River, from the J.C. Boyle Powerhouse to the Oregon-California state line, was designated the Klamath Scenic Waterway by majority vote in 1988, in part because of the valued scenic resources.

Landscape Characteristics. The upper Klamath River Canyon is the predominant visual element in the region, exhibiting considerably more landform variety than the surrounding plateau. The high desert canyon, classified by BLM (1978) as part of the Rolling Plateau within the Recent-age High Cascades physiographic province, cuts across the southeastern corner of the surrounding plateau. This extensive plateau is characterized by regular, rolling topography; whereas, the canyon exhibits considerably more landform variety with cliffs, steep slopes, upland benches, alluvial terraces, and a meandering river channel, which can all be encompassed in a single view. The portion of the canyon in Oregon is characterized by steep, layered basalt canyon walls, rising as high as 1,000 feet above the river. Rock is exposed in approximately 35% of the canyon as vertical rock cliffs, bedrock outcrops, talus slopes, and rock slides. The canyon opens up in California, with rolling hills in the foreground and steep basalt cliffs and cinder cones in the background; this enhances the visual diversity, compared to the views upstream where the canyon is narrow and closer to the river.

From the river to the canyon rim, the visual quality of the study area is strongly influenced by the texture of the landscape. When viewed from a distance, the landscape appears as a mosaic of steep cliffs, talus slopes, conifer and deciduous stands, and rolling grassland areas. Viewed more closely, the rock outcrops combined with the vegetative diversity produces a strong visual impression.

Vegetation in the canyon is diverse due to elevation differences, aspect, slope, and soil diversity. Segments 1 and 2 are forested primarily by ponderosa pine, and in segment 3 by oak, but a wide variety of conifers, juniper, deciduous trees, shrubs, and grasses also occur throughout. Colors within the canyon, influenced heavily by the vegetation, are medium-to-dark greens, grays, browns, and tans.

The prominence of colors is most obvious in the fall when the leaves of deciduous trees (primarily oaks) change color, adding reds and yellows to the landscape. During spring and early summer, flowering brush and wildflowers enhance the color contrasts with the background of greens and browns. Winter snow adds additional diversity.

The Klamath River itself further increases the visual variety in the canyon, flowing through diverse topography, dropping steadily to form a series of pools and rapids. As it flows through the canyon, it changes from slack, slow flowing water in the wider areas to a rushing torrent of cascading whitewater through narrow rocky walls and back to slack water through the rolling, grassy hills in California.

Cultural Modifications. Negative cultural modifications, such as the dirt roads and facilities associated with the J.C. Boyle hydroelectric project in segment 1, are disharmonious with the existing scenery. Below the J.C. Boyle Powerhouse, the landscape is not dominated by visible logging, irrigated agriculture, hydroelectric facilities, or other developments common elsewhere in the region. Dirt roads and wood pole powerlines in segments 2 and 3 do not add favorably to visual variety, but are rarely seen by the casual observer and are not considered to be scenic quality detractors. Positive cultural modifications in segment 3, such as the rustic ranches, historic structures, and agricultural and grazing activities, add favorably to the visual variety and harmony in the canyon. The strong sense of cultural heritage and famous sites (described in the Historical section of this chapter) combined with the scenic beauty of the canyon draws visitors from outside the region.

Aesthetic Experiences. The Klamath River Canyon provides excellent opportunities to view wildlife and wildflowers, or to experience solitude. The chances of spotting a soaring eagle, grazing deer, swimming river otter, or an osprey diving for fish are high. Wildflowers are plentiful in the spring and summer and can be viewed in many places throughout the study area. Downstream from the J.C. Boyle Powerhouse, the canyon's remoteness and steep topography provides visitors uncrowded and natural aesthetic experiences, not usually available at the more popular and famous national parks, monuments, and rivers in or out of the region. The Klamath River Canyon's scenery compares with the Rogue River's wild and scenic designated portions in terms of landform, vegetation, color, scarcity, and cultural modifications. Some factors even exceed those on the Rogue, such as landform variety compared to immediate surrounding areas, vegetation diversity, and seasonal color variations.

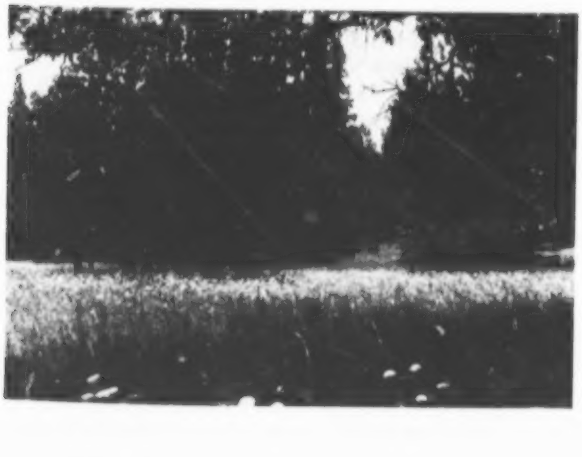
Vegetation

The upper Klamath River Canyon exhibits a unique and diverse collection of plant communities, due in part to the varied topography, aspect, elevation, soil type, and microclimates within the canyon. Bisecting the Cascade Range, the canyon cuts through distinct vegetative zones, adding to the diversity. In addition to the montane vegetation typical of the Cascade region, the canyon exhibits plant communities found in the interior valleys to the west and the high desert to the east. A mosaic of pine, oak, and mixed conifer communities dominate the make-up of the canyon. Ponderosa pine and Oregon white oak are the dominant tree species found throughout the canyon. The species discussed in the following community descriptions are representative, not all inclusive. These community descriptions were modified from City of Klamath Falls data (1986). Appendix+E contains common and scientific names for the species discussed in this section.

The elevation of the canyon rim in the upper 10 miles of the study area (between RM 224.5 and 214), referred to as the "upper canyon" for discussion of vegetation, ranges from 4,400 feet to 3,400 feet, averaging 1,000 feet above the river. In the lower 11 miles (downstream from RM 214), or "lower canyon" for this discussion, the rim elevation goes from 3,900 feet down to 3,400 feet at the southern boundary of the study area. The upper canyon is more moist and densely forested than the lower canyon, where the topography and forest opens up and becomes drier.

The major plant communities found in the study area are mixed conifer forest, pine/juniper, pine/oak forest, oak forest, and oak/shrub. Meadows and riparian areas occur within the study area, but are small and limited to specific sites and conditions. Limited areas of oak grasslands occur on slopes and benches and are composed of grasses and oaks found in meadow and oak communities.

The mixed conifer forest is found on the rim, in the canyon bottom, and on north facing slopes of the upper canyon. Predominant overstory species in this community include ponderosa pine, Douglas-fir, and Oregon white oak. Incense-cedar, California black oak, sugar pine, golden chinquapin, and white fir occur less frequently in these stands. Predominate shrub species are snowberry, western serviceberry, mountain mahogany, deerbrush, and Oregon grape. More common forbs include wild strawberry and lupine; western fescue, pine bluegrass, blue wildrye, and medusahead wildrye are common grasses.



The pine/juniper community is found on drier, more exposed slopes in the upper canyon. The dominant overstory species are ponderosa pine and western juniper. Oregon white oak is sparse, but does occur. Understory shrub species include deerbrush, rabbitbrush, mountain mahogany, and occasionally gooseberry. Common forbs are buckwheat, common buttercup, pussytoes, Nuttall's gayophytum, and Puget balsamroot. Cheatgrass, hairy brome, medusahead wildrye, needlegrass, and pine bluegrass are some common grasses.

The pine/oak forest is found primarily in the lower canyon. Predominant overstory species are ponderosa pine and Oregon white oak, with incense cedar, Douglas-fir, and California black oak in the moister sites. Understory varies, with the drier sites made up of primarily wedgeleaf ceanothus and bitterbrush; deerbrush, poison oak, snowberry, western serviceberry, and rabbitbrush are found on moister sites.

The oak forest community occurs throughout the study area on dry slopes and in the river bottom. Oregon white oak, usually associated with ponderosa pine, western juniper, and California black oak, is the dominant tree. The understory varies according to aspect and stand density. Dominant shrubs include mountain mahogany, snowberry, wedgeleaf ceanothus, bitterbrush, rabbitbrush, deerbrush, and western serviceberry; Puget balsamroot, Idaho fescue, bluebunch wheatgrass, cheatgrass, bottlebrush squirreltail, junegrass, needlegrass, and medusahead wildrye are common forbs and grasses.

The oak/shrub community is found throughout the study area on slopes and benchlands. Oregon white oak is dominant and can occur as a small, shrubby tree. Associated trees are ponderosa pine, western juniper, Douglas-fir, and sugar pine. Understory vegetation varies with site location, but common shrubs include mountain mahogany, wedgeleaf ceanothus, manzanita, poison oak, deerbrush, snowberry, and rabbbitbrush. Forbs and grasses are well developed in open areas and include Puget balsamroot, mountain dandelion, yarrow, Solomon-plume, large-flowered collomia, wooly sunflower, buckwheat, and tarweed; common grasses are cheatgrass, bluebunch wheatgrass, needlegrass, hairy brome, two-flowered fescue, pine bluegrass, and bottlebrush squirreltail.

Small meadows occur in the river bottom of the upper canyon as a result of early homesteaders clearing the land for agriculture, on moist benches above the river in the lower canyon, and on both sides of the river in segment 3. In addition to the forbs and grasses mentioned in the previous plant communities, typical forbs include California poppy, least hopclover, and tidy-tips; soft cheat, bulbous bluegrass, foxtail barley, and few-flowered wild oatgrass are typical grasses.

The few riparian communities occur in narrow bands along the river, in drainages along the canyon, and on the edges of islands in the river. Due to the fluctuating river levels from the outflow of the J.C. Boyle Powerhouse, the establishment of streamside riparian vegetation is limited. Predominant riparian overstory species are Oregon white oak, birch, white alder, and Oregon ash. Blue elderberry, Lewis mockorange, willow, Douglas spiraea, and western wild grape make up the common shrub layer. Common forbs include watercress, monkey flower, speedwell, cattail, and boreal bog-orchid; reed canary grass, sedges, and rushes are also present. Although not a major component of the riparian community, stands of quaking aspen are found in drainages along the canyon.

The occurrence of threatened and endangered plants in the study area are unknown at the present time. Limited surveys have been conducted in the past to document these species. Several species occur nearby and may potentially be found in the study area. One Federal candidate species (Category 2), the pygmy monkey-flower, has been found on the Ward Road, which is adjacent to the west rim in the upper canyon, just outside the study area boundary (Tomlins 1989, pers. comm.). Another candidate species, Green's mariposa lily, has been found south of the study area. A portion of the canyon is within the historic range of this species and it potentially occurs here (Brock 1988), although none were found in 1986 during the City of Klamath Falls' survey. Short-podded thelypody is a forb that historically has been found on the Klamath River near the town of Keno (Abrams 1944) and may occur in the study area (King 1989, pers. comm.). This Category 3C species has been nominated for the BLM's sensitive species list by the Lakeview District BLM. In addition, the Oregon Natural Heritage Database has listed this species as threatened in Oregon, but more common or stable elsewhere.

Water

Water resources are a key component in shaping the animal and plant communities found within the study area. Although the river within the study area is the primary focus of examination, factors upstream significantly affect this portion of the river. Those factors that are discussed in this section include water rights, flows, beneficial uses, quality (including that of Upper Klamath Lake), and temperature.

Water Rights. Within the Oregon portion of the study area (segments 1 and 2), PP&L is licensed to divert up to 2,500 cubic feet per second (cfs) of Klamath River water for the operation of the J.C. Boyle hydroelectric project. In addition, PP&L has three other water right claims which were acquired with the purchase of land adjacent to the river. Two of these are vested water right claims (not yet adjudicated), and the other is a water right. Two of the permits allow diversion from the Klamath River and one uses water from small tributaries of the Klamath; all three are for irrigation, stock, and domestic use. The volume of water that could be withdrawn by these three permits is an insignificant portion of the total river volume. The Oregon State Department of Forestry has a permit to use up to 10,000 gallons of water per day from an unnamed tributary of the Klamath River (segment 2), near the Topsy Road, for dust abatement. The City of Klamath Falls currently has an application pending with the Federal Energy Regulatory Commission for licensing of a hydroelectric project which would be located primarily within segment 2. The City has recently submitted an application to the State of Oregon Water Resources Department for the diversion of water for hydroelectric generation. The Bureau of Reclamation's Klamath Project diverts water from the Klamath River near the city of Klamath Falls for agricultural irrigation. Rights were claimed for all waters of the Klamath River Basin by the Bureau of Reclamation for this project. Because of water right conflicts, the Oregon Water Resources Department is in the process of adjudicating all water claims in the Klamath River Basin. Within the California portion of the study area (segment 3), the California State Water Resources Control Board currently does not have any water use applications or claim of rights on file, although water is being diverted from the main stem and from Shovel Creek to irrigate pastureland.

The Klamath River Basin Compact set priorities for the use of Klamath River water during low water years. The Compact states in Article III (B) that:

> Subject to the rights described * * * , rights to the use of unappropriated waters originating within the Upper Klamath River

> Basin for any beneficial use in the Upper Klamath River Basin, by direct diversion or by storage for later use, may be acquired by any person after the effective date of this compact by appropriation under the laws of the state where the use is to be made * * *
>
> In granting permits to appropriate waters under this subdivision B, as among conflicting applications to appropriate when there is insufficient water to satisfy all such applications, each state shall give preference to applications for a higher use over applications for a lower use in accordance with the following order of uses: a) domestic use, b) irrigation use, c) recreational use, including use for fish and wildlife, d) industrial use, e) generation of hydroelectric power, and f) such other uses as are recognized under the laws of the state involved.

Stream Flows. Flows in segment 1 between the dam and the powerhouse are not subject to the daily fluctuations occurring in segments 2 and 3 that are caused by power generation at the powerhouse. A minimum flow of 100 cfs is released at the J.C. Boyle Dam into the stream channel to provide adequate instream flow for fish movement through segment 1. In addition to this continuous outflow at the dam, a series of springs in the riverbed between the dam and the powerhouse add another estimated 250-300 cfs of flow, which keeps a relatively constant flow of approximately 350-400 cfs during summer.

Stream flows have been measured since January 1959 by the United States Geological Survey (USGS) at a gaging station, located 0.7 mile below the J.C. Boyle Powerhouse. Data from water year (October to September) 1961 through 1988 show an average annual flow of 1,926 cfs with a maximum discharge of 11,000 cfs measured in March 1972 and a minimum flow of 283 cfs in February 1968. Mean monthly flow data, displayed in table 2-8, show that highest monthly flows occur December through April and lowest occur June through August.

The J.C. Boyle Powerhouse typically operates in a peaking mode with one turbine during low flow periods (summer) anywhere between 4 a.m. and 4 p.m., and both turbines, at times continuously, during high flow (late winter/early spring). Peaking operations cause significant daily water fluctuations in the river. In the summer this ranges from a baseflow of 300-400 cfs (outflow from the dam and springs in segment 1) to approximately 1,500 cfs with one turbine running (1,250 cfs maximum throughflow at each turbine). During highflow periods (winter), with both turbines running and water spilling over the dam,

Table 2-8. Mean Discharges and Percent Annual Runoff, Klamath River

Month	Mean (cfs)	Minimum (cfs)	Maximum (cfs)	Percent Annual Runoff
OCT	1,688	786	3,157	7.3
NOV	2,198	897	3,989	9.5
DEC	2,703	1,112	5,733	11.7
JAN	2,671	1,174	7,905	11.6
FEB	2,726	1,091	7,780	11.7
MAR	3,155	634	8,755	13.7
APR	2,552	723	5,645	11.0
MAY	1,726	591	3,935	7.5
JUN	873	550	2,328	3.8
JUL	651	501	1,339	2.8
AUG	904	591	1,054	3.9
SEP	1,260	776	1,876	5.5
ANNUAL	1,926	786	4,458	100

NOTE: All data were measured at USGS gaging station below J.C. Boyle Powerhouse between 1961 and 1988.

river flows range from 3,000-8,000 cfs. The daily winter fluctuations are less drastic since baseflow is much higher due to precipitation or seasonal runoff. Actual effects of typical summer peaking operations (one turbine) on the river level are seen in a vertical difference of approximately 1-2 feet between high and low flow. During periods of nongeneration, this dewatering leaves a portion of the streambed exposed and dry.

Beneficial Uses. The Oregon Department of Environmental Quality (DEQ) has established beneficial uses for which Klamath River water will be managed (OAR 350-41-962). These established beneficial uses are public and private domestic water supply, industrial water supply, irrigation, livestock watering, salmonid fish rearing and spawning, resident fish and aquatic life, wildlife and hunting, fishing and boating, water contact recreation, and aesthetic quality.

In addition, the California State Water Resources Control Board (1988) has established beneficial uses for water in the North Coast Region; these are broadly categorized as water supply, recreation, fish and wildlife habitat, navigation, power generation, and scientific study. They have also outlined specific existing and potential beneficial uses for Klamath River water in California. These existing beneficial uses include municipal and domestic supply, agricultural supply, industrial process supply, industrial service supply, groundwater recharge, freshwater replenishment, navigation, contact and non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, fish migration, and fish spawning.

Water Quality. Water quality standards have been set by the Oregon DEQ for Klamath Basin waters and specifically for the Klamath River from Upper Klamath Lake to the state line (OAR 340-41-965). In California, the State Water Resources Control Board (1988) has established water quality objectives for the upper Klamath River. Water quality is monitored monthly by the Oregon DEQ at several locations above the Keno Dam and at the USGS gaging station just below the J.C. Boyle Powerhouse (RM 219.9). The City of Klamath Falls (1986) has also monitored water quality at several locations between Keno Dam and Copco Reservoir in relation to the proposed Salt Caves project. Some of these data, displayed in table 2-9, show that Oregon DEQ water quality standards (range values) were exceeded for dissolved oxygen, pH, conductivity, and total coliform.

Water quality of the Klamath River within the study area is affected by various factors upstream where non-point source pollutants and discharges from primary industries (point sources) are assimilated into the main stem of the river. The Klamath River upstream from Keno Dam has been listed by Oregon DEQ (1988) as a waterbody suspected of being "water-quality limited" by toxic pollutants (mercury, lead, arsenic, and zinc, in this case) due to point or non-point sources. Waterbodies were listed on the "suspected list" when water quality or beneficial use problems were identified through fish tissue, sediment, or water samples, but information was inadequate to confirm violations of water quality standards. Some potential sources of these pollutants include wastewater effluent from city and suburban sewage treatment facilities and lumbermills adjacent to the river, irrigation returns at Klamath Straits drain, and naturally occurring background levels of heavy metals in river sediments. The State has primary responsibility to prevent, reduce, or eliminate pollution and is currently developing water quality assessment plans and control strategies for those waterbodies suspected of not meeting water quality standards or supporting beneficial uses. As part of these studies, Oregon DEQ (1988) is establishing total maximum daily loads (TMDLs) for industries discharging effluent into the Klamath River. Oregon DEQ water quality data also shows that the Klamath River above Keno Dam violates the dissolved oxygen and pH standard and exceeds Environmental Protection Agency established toxic criteria levels of unionized ammonia during low summer flows. To address this problem, DEQ has proposed TMDLs for ammonia and the biochemical oxygen demand (BOD), a measure of stream pollution loads.

The Klamath Project, administered by the U.S. Bureau of Reclamation, was set up in 1905 to provide irrigation water and flood control to reclaimed lands of Lower Klamath and Tule lakes. The project area includes 233,625 acres of irrigable lands in the Klamath Basin. The project, which has the largest water rights appropriation in the basin, diverts water from Upper Klamath Lake and Klamath River through canals and ditches to various irrigation districts and the Tule Lake National Wildlife Refuge Complex. Drainage water from this closed basin is conveyed back into the Klamath River via the Klamath Straits Drain, entering the river upstream from Keno, Oregon.

The source of the Klamath River—Upper Klamath Lake—is another potential source of non-point pollution. Upper Klamath Lake is a hyper-eutrophic lake that supports an abundant algal population. Lake water quality varies according to season and the annual amount of runoff entering the lake. Recent studies (Coleman, et al. 1988) have pointed out that the eutrophic condition of the lake, though natural, has been accelerated through agricultural activities,

Table 2-9. Mean and Range Values[*] for Observed Water Quality Parameters, Mainstem Klamath River

Parameter	Keno Bridge[1] RM 234.9	USGS Gaging Station RM 219.9	Segment 3[7] RM 205.5	Water Quality Standards: Oregon–Klamath Basin	Water Quality Standards: California–Klamath River (Above Irongate Dam)
Temperature (°C)	12.4 (0.5-23.9)	12.5 (0-24.0)[2]	12.5 (1.7-19.7)		
Dissolved Oxygen (mg/l)	7.7 (3.0-12.6)	9.4 (3.4-12.8)[2]	9.2 (7.5-11.2)		7.0-10.0
(% saturation)	81 (6-145)	98 (40-138)[2]	—		
pH (units)	7.8 (6.5-9.3)	7.9 (7.3-9.1)[2]	7.7 (7.1-8.7)	7.0-9.0	7.0-8.5
Conductivity (umhos at 25°C)	181 (140-253)	289 (120-2,740)[3]	151 (117-258)	not >400 umhos at 25°C measured at border	275 umhos
Turbidity (FTU)	9.2 (1.0-38.0)	4.9 (1.0-21.0)[4]	9.4 (2.1-30)		
(JTU)	—	10.5 (1.0-74.0)[5]	—		
Total Suspended Solids (mg/l)	16.9 (1.0-105.0)	—	10.9 (1.6-26.9)		
Total Coliform (MPN/100 ml)	— (30-45,000)	665 (23-7,000)[6]	371 (23-1,600)	average not >1,000/100 ml	
Nitrates (ugN/l)	150 (20-550)	438 (20-2,300)[4]	445 (100-940)		
Total Ammonia (ugN/l)	600 (70-1,440)	416 (10-580)	123 (10-580)		
Unionized Ammonia (ugN/l)	—	8.5 (0.3-50)[2]	—		
Orthophosphate (ugP/l)	136 (17-270)	332 (0-2,800)[5]	117 (60-220)		
Total Phosphorus (ugP/l)	279 (94-724)	230 (91-500)[4]	202 (120-350)		
BOD (mg/l)	—	2.7 (0.3-6.3)[2]	—		

[*] Range values are in parentheses.
1 = 1977-1983 Oregon DEQ
2 = 1959-1988 Oregon DEQ
3 = 1960-1987 Oregon DEQ
4 = 1977-1988 Oregon DEQ
5 = 1959-1976 Oregon DEQ
6 = 1972-1988 Oregon DEQ
7 = 1984-1985 Station KR-5, City of Klamath Falls

ABBREVIATIONS USED IN THIS TABLE
mg/l = milligrams per liter
umhos = micromhos
FTU = Formazin Turbidity Units
JTU = Jackson Turbidity Units
MPN = most probable number technique
ugN/l = micrograms nitrogen per liter
ugP/l = micrograms phosphorus per liter
BOD = biochemical oxygen demand

livestock production, logging, urban development, and reclamation of wetlands for agriculture, which have created a significant increase in organic nutrients entering the lake. This high, external nutrient loading, combined with internal nutrient rich sediments, high concentrations of nutrients in groundwater, and extremely shallow waters (mean lake depth of eight feet) cause massive blooms of blue-green algae that typically occur in the lake in the summer. These blooms result in poor water quality conditions, which include extremely high pH and wide fluctuations in dissolved oxygen and carbon dioxide levels.

Table 2-10 shows water quality data collected during this critical period. These conditions, along with regional agricultural runoff and other non-point source pollution entering the Klamath River between the outlet of the lake and Keno Dam, contribute to river water quality problems that can occur in the study area during low summer flows. As these massive quantities of blue-green algae decay and flow downstream, they increase the pH and BOD and lower dissolved oxygen levels. In addition, the algae can impart a bad odor to water and a detrimental taste to game fish. This high nutrient loading, although detrimental to the Upper Klamath Lake, helps maintain the productive wild rainbow trout population downstream—the nutrient-rich waters provide a food source for the flourishing aquatic invertebrates, which in turn provide an abundant prey base for rainbow trout.

Water quality downstream from pollution sources will naturally improve due to dilution of the pollutants. This mixing occurs on the Klamath River as low quality waters flow downstream. In addition, the heavy algal loads are diluted and mixed in the water column and dissolved oxygen levels increase as water flows through turbulent sections downstream and is re-aerated. The organic nutrients within the water contribute to the distinctive coffee color and foam that is often noted on the Klamath River. Instream reservoirs such as J.C. Boyle and Keno can improve or degrade water quality. According to one source (City of Klamath Falls 1986), the presence of instream reservoirs can reduce pH, bacterial counts, nutrients, sediments and turbidity, BOD, and settling of algal loads. Conversely, another study on the Klamath River (Phinney and Peck 1960) stated that impoundments greatly increase organic loads and burden the river.

Water Temperature. River water temperatures in the study area vary with season and by segment. Highest water temperatures occur June through August in conjunction with increasing local air temperatures, lower flows, and degraded water quality. Daily summer temperature fluctuations are least in segment 1 and greatest in segments 2 and 3. Because of the stable flows and instream springs in segment 1, temperatures remain relatively constant, typically around 70 degrees F (Fahrenheit) in August and 48-53 degrees F in early spring. Mid-day peaking operations at the J.C. Boyle Powerhouse cause significant daily temperature fluctuations in segments 2 and 3—in August typically reaching a high of 70 degrees F in early evening following the passage of the warmer large volume of reservoir water from turbine operations, and a low of 58 degrees F in early morning

Table 2-10. Klamath River Water Quality Parameters (Median Values) During Critical Period, June-October, 1977-1987

Parameter		Klamath Strait (RM 1.7)	Keno Bridge	USGS Gaging Station (RM 219.9)
Dissolved Oxygen	(mg/l)	4.2	5.4	8.8
	(% sat)	52	60	100
Total Ammonia	(ug/l)	380	450	180
Unionized Ammonia	(ug/l)	51	32	6
Nitrate	(ug/l)	80	40	570
Phosphate	(ug/l)	500	305	254
Orthophosphates	(ug/l)	290	145	156
pH		8.5	8.3	8.2
BOD	(mg/l)	5.0	4.6	2.7

Source: Oregon DEQ 1988.

hours (City of Klamath Falls 1986). Between 1959 and 1988 the maximum water temperature recorded at the USGS station in segment 2 was 75.2 degrees F and the minimum was 32 degrees F.

Geology

Regional Geology. The upper Klamath River is in a transition area between the High Cascade and Basin and Range provinces. High Cascade features include Quaternary-age volcanic flows, mostly basaltic and andesitic, that cap older volcanic deposits; cinder cones from minor upper Pleistocene and Recent-age pyroclastic eruptive centers. The volcanic rocks near Copco Lake are intruded by numerous dikes and plugs of andesite, rhyolite, and basalt. Significant volcanic centers along the Cascade Range include Mt. McLoughlin, 30 miles north of the area, and Mt. Shasta, 40 miles south. Local Basin and Range features include a series of fault block mountains separated by basins; and normal faults that run in a north-northwest direction with the down-thrown side to the northeast, creating an en echelon or stair-step pattern. Evidence of these fault patterns are found north and east of the study area. The study area has low seismotectonic (earthquake) activity; however, there is ongoing tectonic activity to the west.

Lithology. The oldest exposed rock in the study area is a rapidly weathering middle to upper Miocene-age tuff of unknown thickness with varying degrees of welding. The tuff is overlain by upper Tertiary- to Pleistocene-age basalts and andesites that are approximately 900 to 1,000 feet thick; the basalts and andesites are overlain by Quaternary alluvium, colluvium, talus, lacustrine, and landslide deposits. Landslides are most common in the southern half of segment 2.

Mineral Resources. No economic mineral deposits are known to exist in the study area. Potential mineral resources are too remote or of insufficient quality or quantity to be extracted economically. These potential resources include gravel deposits, diatomite (clay) beds, basalt and andesitic basalt quarry sites (used for roads and as rip rap), and geothermal resources in segment 3.

Soils. The soils in the study area are relatively shallow and rocky with a generally high clay content in either the surface or subsurface layers. Soil textures are somewhat variable and include gravelly loam, stony loam, cobbly loam, gravelly clay loam, clay loams, and clays. Erosion and mass soil movements are characteristic occurrences in the geomorphically young Klamath River Canyon, which is being actively downcut by the upper Klamath River. There are some major landslides in the canyon, such as the one on the east side of the canyon at RM 214 and the one on the northwest side of the canyon between RM 210 and 211.

Chapter 3—Eligibility Determination

Introduction

The Wild and Scenic Rivers Act states that to be considered for inclusion in the National Wild and Scenic Rivers System (NWSRS), a river or river segment must be free-flowing and, with its immediate environment, must possess one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.

This chapter discusses the definition of free-flowing and whether or not segments fit that definition; BLM criteria for assessing outstandingly remarkable values; and the outstandingly remarkable values in each segment. The descriptions of outstandingly remarkable values are summaries only, based on the comprehensive description of each resource in chapter 2.

Free–Flowing

Free-flowing, as defined in Section 16(b) of the Wild and Scenic Rivers Act, means "existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway." Free-flowing should not be confused with naturally flowing, which is flowing without any upstream manipulation except by nature. The presence of impoundments above and below the segment (including those that regulate the flow regime through the segment) and existing minor dams and diversion structures within the study reach will not by themselves render a river ineligible. There are many river segments in the NWSRS that are downstream from major dams, such as the Rogue River in Oregon and the lower Klamath River in California, or are between dams, such as the Tuolumne River in California. Some components of the system, such as the Clackamas, Deschutes, and Snake rivers in Oregon and the Trinity River in California, even derive their recreational values, at least in part, from the operation of upstream dams.

Above-ground flume and shoreline modification in segment 1.

At the northernmost portion of segment 1, up to 2,500 cubic feet per second (cfs) of the upper Klamath River's flow is continuously diverted at the J.C. Boyle Dam; that is, it is continuously diverted through the conduit during periods of power generation and is backed up behind the dam during non-generation periods to be diverted for later use. The diverted water passes through an above-ground concrete flume for 2.1 miles, enters a 0.3 mile long tunnel that passes through the canyon wall, and plunges down penstocks and through turbines at the J.C. Boyle Powerhouse, before being returned to the natural riverbed at approximately RM 220.6. The summertime flow between the dam and powerhouse remains a fairly constant 350-400 cfs (100 cfs is released at the dam and 250-300 cfs is from natural springs).

Construction of the above-ground flume and access road for the J.C. Boyle project resulted in substantial modification of portions of the west bank of the river in segment 1. Portions of the west side are now fillslope and large boulders were used to stabilize the toe of the slope. The construction of the spillway in segment 1 also resulted in modifications of the waterway. Large basalt boulders were placed along the west bank of the river to prevent erosion if water is released from this spillway.

Segment 1. Because of the major modification of the waterway and the significant continuous diversion of water, it was determined that segment 1, between the J.C. Boyle Dam and Powerhouse, does not meet the definition of "free-flowing" in the Wild and Scenic Rivers Act. It was therefore, also determined to be not eligible for inclusion in the NWSRS.

Segments 2 and 3. Water flows in segments 2 and 3 fluctuate daily and seasonally, depending on whether one, two, or neither of the J.C. Boyle turbines are in operation. In the summer, with both turbines shut down, flows average 350-400 cfs. With one turbine operating, flows are 1,500 cfs. In the winter, both turbines usually operate around the clock, releasing up to 2,500 cfs, depending on upstream flows.

Segments 2 and 3 were determined to meet the definition of "free-flowing." Although the flows fluctuate, the original volume of water that was diverted at the J.C. Boyle Dam is returned to the river bed at the powerhouse, keeping the volume consistent with that of the upper Klamath River above the J.C. Boyle Dam. There are no significant alterations of the stream bank in segments 2 and 3.

The definition of "free flowing", as found in the Wild and Scenic Rivers Act, is not always easily applied to all river segments. In the case of the Upper Klamath River, the BLM's river study team and managers readily determined segments 2 and 3 to clearly meet free flowing criteria. The determination for segment 1, on the other hand, was not so readily apparent and required extensive consideration and reconsideration of river attributes and consultation with experts familiar with application of the Wild and Scenic Rivers Act.

Outstandingly Remarkable Values

The second criteria a river must meet to be eligible for inclusion in the NWSRS is that it must possess one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. The term "outstandingly remarkable" is not precisely defined in the Wild and Scenic Rivers Act; consequently, the determination of whether or not a river area contains outstandingly remarkable values is based on the professional judgement of the interdisciplinary study team and responsible BLM line managers.

The BLM has developed a set of criteria to assess outstandingly remarkable values (Instruction Memorandum OR-89-632). These values, which must be directly river-related, are considered outstandingly remarkable if they are unique or exemplary compared to similar values in other river areas in the region. The outstandingly remarkable features should also be at least regionally significant. Unless otherwise specified, the region used in this report is Region 9, one of the geographic regions described in chapter 1 of the 1988 Statewide Comprehensive Outdoor Recreation Plan. This plan is a result of a regional effort to identify recreation needs in Oregon, Washington, and Idaho, and was developed by Federal, State, and local recreation agencies along with private, nonprofit, and commercial organizations which provide outdoor recreation resources, facilities, and services to the public. The upper Klamath River is in Southwestern Region 9, which includes Jackson, Josephine, Klamath, and most of Douglas counties in Oregon (see appendix F). Siskiyou County, California is included in the region to include a comparison of values in segment 3.

The upper Klamath River has been the subject of a number of resource studies. Based on values identified in those studies, comparison of similar resource values in the region, public comment analysis, coordination with other agencies, and on-the-ground surveys, it has been determined that the outstandingly remarkable values in segments 2 and/or 3 are recreational, wildlife, fish, prehistoric, historic, and scenic. These values are summarized by segment in table 3-1.

Although it was determined that segment 1, between the J.C. Boyle Dam and Powerhouse, does not meet the "free-flowing" definition, its resource values are briefly mentioned here for report completeness and information purposes. Segment 1 has outstandingly remarkable fish resources because of the presence of wild rainbow trout and the importance of the area as rearing habitat. Two Federal and State endangered (Lost River and Shortnose suckers) and a Federal candidate and State sensitive (Klamath largescale sucker) species are potentially present in this segment. The recreational value is locally significant for fishing. There is one prairie falcon nest in the portion of segment 1 that BLM designated as falcon habitat (map 2-6). Bald eagles and falcons occasionally forage in this area. Wildlife use in segment 1 is not as significant as that in segments 2 and 3. No known prehistoric sites exist above the powerhouse. Historic Topsy Road only briefly enters the study area. Although segment 1 is designated Scenic Class A, there are too many negative cultural modifications to consider the scenic value outstandingly remarkable. Geologic values are significant, but not outstanding.

Recreation Resources

Eligibility Criteria. Recreational opportunities are or have the potential to be unique enough to attract visitors from outside the geographic region. Visitors would be willing to travel long distances to use the river resources for recreational purposes. River-related opportunities could include, but not be limited to, sight-seeing, wildlife observation, photography, hiking, fishing, hunting, and boating. Interpretive opportunities may be exceptional and attract or have the potential to attract visitors from outside the geographic region. The river may provide or have the potential to provide settings for national or regional commercial usage or competitive events.

Segment 2. Recreational values on the upper Klamath River are outstandingly remarkable in the quality and variety of year-round whitewater boating opportunities provided. These outstanding opportunities are a result of the releases for the J.C. Boyle Dam/Powerhouse system. The upper Klamath River

Table 3-1. Summary of Outstandingly Remarkable Resources in the Upper Klamath River Study Area

Segment	Resource	Outstandingly Remarkable Characteristics
2	Recreation	Offers a variety of year-round whitewater boating opportunities for rafters, canoeists, and kayakers; provides only year-round Class III-V run in Oregon and northern California, attracting visitors from outside the region who are willing to travel long distances to experience the quality whitewater run; contains more rapids (52) in this segment, ranging from Class I-V, than in most other rivers in the western United States.
	Wildlife	High degree of diversity of wildlife and T&E species; high habitat diversity; five known prairie falcon nest sites; historic peregrine falcon nest eyrie; high potential for reintroducing peregrine falcons; bald eagle nesting territory; primary area of use by the listed T&E species; maternity colony of Townsend's big-eared bat.
	Fish	Inhabited by highly productive, genetically unique wild rainbow trout population; one of six designated wild rainbow trout rivers in the state; potentially inhabited by Lost River and Shortnose suckers (Federal and State endangered) and by Klamath largescale sucker (Federal candidate and State sensitive).
	Prehistoric	High density of sites (39), including village sites, hunting, fishing, and gathering camps, and burial sites; regional interpretive value provides opportunities for scientific study; several sites are eligible for nomination to the National Register of Historic Places.
	Historic	Historic Topsy Road, a stagecoach and freight road in its original form, parallels the east side of the river; includes an excellent example of a livery station associated with stage and freight travel.
	Scenic	Classified as Scenic Quality A, due to unique landform, diverse vegetation, water, and lack of negative cultural modifications; pronounced canyon is the predominant visual element in the region; scenic beauty combined with cultural heritage draws visitors from outside the region.
3	Recreation	Combined with segment 2, provides a variety of unique late season whitewater opportunities for rafters, canoeists, and kayakers, attracting visitors from outside the region who are willing to travel long distances to experience the quality whitewater run; the 22 Class I-III rapids are considered part of the overall whitewater boating experience.

Table 3-1. Summary of Outstandingly Remarkable Resources in the Upper Klamath River Study Area (continued)

Segment	Resource	Outstandingly Remarkable Characteristics
	Wildlife	Foraging use by a pair of nesting bald eagles; seasonal use by migrating peregrine and prairie falcons.
	Fish	Highly productive, genetically unique wild rainbow trout population; only designated wild rainbow trout river in Siskiyou County; inhabited by Lost River and shortnose suckers (Federal and State endangered) and potentially by Klamath largescale sucker (Federal candidate).
	Historic	1870 Ghost Dance Cult ceremonial site, which is one of five such sites in the region, has potential for additional research; Pokegama log chute, an outstanding example of early logging activity on the Klamath River.
	Scenic	Classified as Scenic Quality A, due to unique landform, diverse vegetation, water, and presence of positive cultural modifications; pronounced canyon is the predominant visual element in the region; scenic beauty combined with cultural heritage and historical features draws visitors from outside the region.

provides the only year-round Class IV-V run in the region (the lower Klamath and Rogue rivers offer year-round Class III-IV rapids). This attracts visitors from outside the region who are willing to travel long distances to experience the quality whitewater run. There are more rapids (52) in this section of the river, ranging from Class I to Class V, than in most other rivers in the western United States. Rafting opportunities in segment 2 can be divided by class of rapid. The first half, from RM 220.1 to 214.3, offers less technical Class I-III opportunities. The second half, from RM 214.3 to 209.3, offers highly technical whitewater boating with 10 Class I-II rapids and 18 Class III-V rapids. This relatively short distance (five river miles), combined with the quantity and classification of rapids, provides an experience not found on other rivers in Oregon and northern California. The upper Klamath River is also the only river in the region to offer one-day trips with year-round Class III-V rapids, attracting both private and commercial boaters. Most of the private boaters (rafters, canoeists, and kayakers) are from within the region, whereas most of the commercial rafting outfitters and their clients are from outside the region.

Fishing is considered to be of significant, but not outstanding, value. The river provides an excellent trout fishery and is reputed to be among the better fly fishing rivers in Oregon. The upper Klamath River provides a fishery for wild rainbow trout with an excellent rate of catch that is rivaled in Oregon only by the Deschutes River. Relatively calm water flows through the upper portion of segment 2, providing several prime fishing spots. Currently, the upper Klamath River is one of two major rivers in the region that is open to trout angling year-round (with catch-and-release requirements from June 15 to September 30). The river has a reputation for producing large wild rainbow trout, which draws anglers from outside the region.

Segment 3. Recreational opportunities in segment 3 are also outstandingly remarkable. Whitewater boating in this segment combined with segment 2 provides a variety of unique late-season opportunities. These opportunities are highly valued by boaters, who are willing to travel long distances to experience the quality whitewater run. The 22 Class I-III rapids in the California segment, which allow boaters considerable time to view their spectacular surroundings, are considered part of the overall whitewater boating experience. Combined with segment 2, the upper Klamath River provides both one- and two-day whitewater boating opportunities, depending on the experience desired, and attracts both private and commercial boaters. Most of the private boaters (rafters, canoeists, and kayakers) are from within the region, whereas most of the commercial rafting outfitters and their clients are from outside the region.

Fishing is considered to be of significant, but not outstanding, value. The river provides an excellent trout fishery and is reputed to be among the better fly fishing rivers in northern California. Like segment 2, this segment of the upper Klamath River also provides a fishery for wild rainbow trout with an excellent rate of catch. The water is calmer than the water in the lower half of segment 2, providing several prime fishing spots. The river has a reputation for producing large wild rainbow trout, which draws anglers from outside the region.

Wildlife

Eligibility Criteria. Criteria were developed for both wildlife populations and their habitat. Populations: The river or area within the river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or populations of Federally listed or candidate threatened and endangered species. Habitat: The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for Federally listed or candidate threatened and endangered species. Contiguous habitat conditions are such that the biological needs of the species are met.

Segment 2. The combination of numerous wildlife populations and diverse habitats found within segment 2 is not found elsewhere in the region and qualifies as an outstandingly remarkable resource. Wildlife populations meet the criteria due to the large number of State and Federal listed threatened, endangered, and/or State sensitive (T&E) species that inhabit this segment (table 3-2). The wildlife habitat also qualifies due to its high degree of diversity and importance.

The rich diversity of T&E and other wildlife species found within this relatively small, confined area is unique and cannot be found elsewhere in the region. There are two Federally listed threatened or endangered and two candidate species, nine State listed threatened, endangered, and/or sensitive species, and two Oregon Natural Heritage Database listed species known to occur and an additional six Federal and State listed species potentially occurring within this part of the study area. The following factors are of particular importance in segment 2:

Table 3-2. Threatened, Endangered, and State Sensitive Fish and Wildlife Found Within the Study Area and Those Potentially Within or Near the Study Area.

	Status				
Species	**OR**	**CA**	**Federal**	**Type of Use**	Source
Birds					
Bald Eagle	T	E	*	N	BLM
Peregrine Falcon	E	E	E	M	ODFW
Northern Goshawk	SS			S, PN	ODFW
Northern Pygmy Owl	SS			R	ODFW
Acorn Woodpecker	SS			R	ODFW
Lewis' Woodpecker	SS		FS	R	ODFW
Pileated Woodpecker	SS			ID	BLM
Western Bluebird	SS			N	KF
**Western Yellow-billed Cuckoo	SS	E	3B	ID	Littlefield
Mammals					
Fisher	SS			R	KF
Ringtail	SS			R	KF
Townsend's Big-eared Bat	SS		C2	S	BLM
**Wolverine	T	T	C2	R	ODFW
Herptiles					
California Mountain Kingsnake	SS			R	St. John
Western Pond Turtle	SS		C2	R	St. John
**Tailed Frog	SS			R	St. John
**Spotted Frog	SS			R	St. John
**Short-horned Lizard	SS			R	St. John
**Sharptail Snake	SS			R	St. John
Fish					
Lost River Sucker	E	E	E	R	KF
Shortnose Sucker	E	E	E	R	KF
**Klamath Largescale Sucker	SS		C2	R	KF

ABBREVIATIONS USED IN THIS TABLE
T = Threatened Species
E = Endangered Species
SS = State Sensitive Species
C2 = Federal Candidate Species, Category 2
N = Nester
P = Potential Nester
S = Seasonal
M = Migrant
R = Resident
ID = Insufficient Data
3B = Taxa which do not meet Endangered Species Act's legal definition of species; future investigation could lead to reevaluation of the listing qualifications.
KF = City of Klamath Falls
FS = U.S. Fish and Wildlife Service Sensitive Bird Species

*Listed endangered in California and threatened in Oregon.

**Species potentially within or near the study area.

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- the increasing use of the area by peregrine falcons and the high potential for reoccupation of historic nest sites;
- the potential of the study area for peregrine hack sites or cross fostering with prairie falcons;
- the presence of nesting and migrating bald eagles;
- the diverse and large number of raptors, particularly the presence of nesting prairie falcons and the five known nest sites;
- the golden eagles that forage in and nest near this segment;
- the maternity colony of Townsend's big-eared bat, one of only five known colonies in the region; and
- the large number of wintering non-game birds, which provides an important avian prey base to resident and migrating raptors.

Although in itself not outstanding, the presence of the ringtail cat is a significant feature to the region. In addition, the study area is the easternmost limit of the ringtail cat's range in Oregon.

Wildlife habitat within and surrounding this segment is of exceptionally high quality and diversity, qualifying the area to be outstandingly remarkable in at least a regional context. This is evidenced by the presence and diversity of T&E and other wildlife species inhabiting or migrating through this portion of the study area. The Klamath River Canyon bisects the Cascade Range and cuts through a variety of plant communities, thereby creating the wide diversity of habitats available for wildlife. All five plant communities found in the study area are present in this segment (see Vegetation, chapter 2). The most important habitat features in segment 2 are:

- riverine habitat is important to a wide variety of birds and mammals including bald eagles, osprey, ringtail cat, and river otters;
- the canyon provides a natural migration corridor for a variety of raptors;
- the extensive rimrock is important raptor nesting habitat;
- large live and dead conifers provide nesting and roosting habitat for bald eagles and osprey;
- caves provide important nursery and roosting habitat for several species of bats; and
- the extensive oak forest and grasslands are important habitat to large numbers of wintering non-game birds.

Segment 3. As in segment 2, the combination of habitats and populations qualifies this segment as an outstandingly remarkable wildlife resource in the region. Most of the discussion on habitat and T&E and other wildlife species for segment 2 applies for segment 3. The use of the aquatic and terrestrial environment by wildlife does not significantly change between the two segments. The habitat and wildlife species found in the two segments represent a continuum of use, although there is a change in the plant communities. Those features exclusive to segment 3 are discussed here.

Wildlife populations found in this segment are similar to those in segment 2 except for a few species. Although there are no known bald eagle, prairie falcon, or osprey nest sites in segment 3, these species are commonly seen within the boundaries. There is an osprey nest located within a few hundred yards of each end of this segment. No known colonies of Townsend's big-eared bat exist but they likely forage and possibly roost in this segment. Peregrine and prairie falcons have been sighted in this segment.

The habitat type changes between segments 2 and 3. This transition zone is a critical link in overall habitat use by the T&E species inhabiting the study area and qualifies as outstandingly remarkable. The extensive rimrock found in segments 1 and 2 begins to taper off as the canyon widens out and the rim is further from the river and not as steep. Plant communities are similar to segment 2 except the mixed conifer and pine/juniper types are not found. Pastureland and hayfields are the predominant vegetation types adjacent to the river and more riparian habitat is found in this segment. The pastureland and hayfields provide good foraging habitat for raptors.

Fish

Eligibility Criteria. Criteria were developed for both fish populations and habitat. Populations: The river is nationally or regionally one of the top producers of resident and/or anadromous fish species. Of particular significance is the presence of wild or unique stocks, or populations of Federally listed or candidate threatened and endangered species. Habitat: The river provides exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for Federally listed or candidate threatened and endangered species.

Segment 2. The population of native wild rainbow trout that inhabit this segment qualifies as an outstandingly remarkable resource. The Klamath River is one of three rivers in the region (no others in Siskiyou County) and one of only six in Oregon, designated and managed by the State Department of Fish and Wildlife as a wild rainbow trout fishery. This population is also highly productive, both in terms of high catch rates (of fish up to 20 inches) and reproduction. Additionally, these trout are a naturally spawning population that are genetically unique in being resistant to a lethal parasite, high pH, and high summer water temperatures. These are characteristics that are inherent to the Klamath River and have been lethal to non-native trout introduced into the river in the past. The Northwest Power Planning Council also recognized the significance of the wild trout population by designating the upper Klamath River as a Protected Area due to the wild rainbow population. The Lost River and Shortnose suckers, two Federal and State endangered species, potentially inhabit this segment. The Klamath largescale sucker, a Federal candidate (Category 2) and Oregon State sensitive species, potentially occurs in segment 2.

Segment 3. A combination of fish populations and habitat qualify in this segment as an outstandingly remarkable resource. Although population dynamics are not the same throughout the segments, the wild rainbow trout found throughout segments 1, 2, and 3 represent one population. Consequently, the factors for segment 2 that qualify this population as outstanding also apply for segment 3. As in the Oregon segment, the State Department of Fish and Game has designated and manages the California portion of the Klamath River as a wild rainbow trout area. Two Federal and State endangered species, the Lost River and Shortnose suckers, are found in segment 3. The Klamath largescale sucker, a Federal Candidate (Category 2) species, potentially occurs within this segment.

Segment 3 provides important habitat for the two endangered species, the Lost River and Shortnose sucker. Although these two species are primarily lake dwellers, the Shortnose sucker migrates upstream from Copco Lake to spawn in either the Klamath River or its tributaries. The Lost River sucker has been found in this segment but spawning has not been documented.

Prehistoric Resources

Eligibility Criteria. The river or area within the river corridor contains a prehistoric site(s) where there is evidence of occupation or use by Native Americans. Sites must be rare, one-of-a-kind, have unusual characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes.

Segment 2. The prehistoric resources in this segment have been determined to be outstandingly remarkable because of the abundance of sites combined with their regional interpretive value. A high density of prehistoric sites (39 sites) occur within this 10.2-mile stretch of the river. This demonstrates intensive use of the river corridor by Native Americans and additional research at these sites could further define the prehistory of the river corridor and of this region. These sites include examples of most of the site types available in the region—villages; fishing, hunting, and gathering camps; a quarry site; and burial grounds—and provide the opportunity to more thoroughly explore prehistoric year-round use of the canyon. A wide array of animal and plant resources have been recovered from some of these sites. This information, combined with the diversity of sites, show that the canyon was used year-round—an exception in this region, where the distribution of plant and animal resources was usually spread over a wide area, and necessitated seasonal movement of people from place to place.

A wide range of artifacts from sites in segment 2 has shown that the river corridor was not the exclusive territory of one tribe, but was used at various times, possibly concurrently, by the Shasta, Klamath, Modoc and perhaps the Takelma. Tribal boundaries appear to have fluctuated within the upper Klamath River Canyon over the last 2,000 years. This is important because it shows that territorial boundaries between the different tribes using the canyon did not remain the same through time (an assumption often made about the boundaries of prehistoric culture areas), but changed as each group expanded or decreased its tribal area. These findings raise interesting research questions concerning the timing of these boundary fluctuations, trade relationships between the tribes, and early use of the canyon. The ability to gain additional archaeological data from these sites about prehistoric use of the upper Klamath River Canyon make several sites (especially villages) eligible for nomination to the National Register of Historic Places. It is also possible that, in combination, all the sites within the immediate river corridor may qualify for nomination as a Historic District. To be eligible for nomination, sites must have yielded, or may be likely to yield, information that is important in prehistory or history (36 CFR 60.4d).

Segment 3. The prehistoric resources in segment 3 have been determined to be significant, but not outstandingly remarkable. Five prehistoric sites have been recorded in this segment using archaeological reconnaissance surveys. The locations of nine additional village sites have been identified by ethnographic research (Theodoratus et al. 1989). This research has also shown concurrent use of the area by the Shasta and Modoc as village sites and burial grounds. Only limited archaeological surveys and research have been conducted on the private property in this segment. Great potential exists for future research to verify the locations of these ethnographic sites and for the interpretation of prehistoric use in the area. This potential to yield important prehistoric or historic information may make several of these sites eligible for nomination to the National Register of Historic Places.

Historic Resources

Eligibility Criteria. The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual or one-of-a-kind in the region. A historic site(s) and/or feature(s) in most cases is 50 years old or older. Of particular significance are sites or features listed in, or eligible for, inclusion in the National Register of Historic Places.

Segment 2. In this segment, sites are primarily associated with Topsy Road, a historic stagecoach/freight road that runs along 5.1 miles of the canyon. This road, completed in 1890, is an outstandingly remarkable example of an early stagecoach and freight road in its original form. Bisecting the Cascade Range, Topsy Road is the only road into the Klamath Basin that was used on a year-round basis. From 1875 until the early 1900's, this road was traveled, even during inclement weather, to bring mail, freight, agricultural goods, and travelers to the Klamath Basin. Most of the original integrity of Topsy Road remains. One exceptional feature of the road, Topsy Grade, is found within segment 2. Topsy Grade is a portion of the road that cuts into a vertical basalt face as the road ascends the rim of the canyon. An excellent example of a livery station associated with stage and freight travel, known as the Way Station, provided year-round services to travelers on the Topsy Road. The two-story log cabin used at this stopover is in good condition and is visible from the road. The presence of this historic site, as well as other sites (Way Cemetery, Kerwin ranch, Frain ranch, and Topsy School) along the road, serve to

Two-story log cabin at the Way Station in segment 2.

enhance the historical value of Topsy Road. Portions of Topsy Road are eligible for nomination to the National Register of Historic Places.

Segment 3. One of the known prehistoric villages in this segment appears to have been used after European contact for sacred ceremonies associated with the 1870 Ghost Dance cult (City of Klamath Falls 1985) and is thus considered outstandingly remarkable by BLM Guidelines. This site, CA SIS 1198, has four girdled trees (three are still standing), which are the only visible remains of these religious ceremonies. Standing in the center of the dance grounds, these trees were used to channel energy between the earth and heaven, to accept prayers, and to transform people. There are only four other known Ghost Dance locations (Spier 1927) in this region, all of which are clustered near Upper Klamath Lake. According to Spier (1927), the Ghost Dance cult spread from the Klamath tribe southward to the California tribes via the Klamath River. This site may have been a part of the southern spread. After additional research to define the full extent of its historic use, this religious site may be eligible for nomination to the National Register of Historic Places.

Another historic feature of segment 3 is the Pokegama log chute. This feature is an outstandingly remarkable example of early logging activities along the Klamath River. The timber industry was a major economic activity along the Klamath River from the late 1800's until the turn of the century. This 2,000-foot wood chute was used to transfer logs from railroad cars above the canyon rim to the Klamath River. At the height of its operation, 300 logs were carried down the chute each day and 110 men were employed along the river to facilitate movement of the logs to the mill at the town of Klamathon. The location of the log chute is visible as a cut in the rimrock along the western rim of the canyon and as a long trench where it cuts through the hillside. This historic feature can be seen from Topsy Road near the Klamath Hot Springs and from the Klamath River.

Topsy Road also runs through this segment (6.3 miles), but is considered to be a significant, rather than outstandingly remarkable, feature in segment 3. The road has been improved by Siskiyou County and only a small portion, near the California-Oregon border, resembles the original road. A significant historic feature along Topsy Road in segment 3 was a livery station that later developed into the Beswick Hotel and Klamath Hot Springs Resort. Freight wagon drivers and passengers on the stagecoach would stop overnight at the hotel as they travelled from Ager, California to the Klamath Basin. After its development as a resort and spa, it was visited by noted guests such as President Herbert Hoover, Zane Gray, and Amelia Earhart. Guests at the spa and resort came to use the restorative hot springs, and to fish and hunt. The original hotel and other buildings at the resort are visible from the road and river.

Scenic Resources

Eligibility Criteria. The landscape elements of landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications are unique and harmonious. The rating area must be Scenic Quality A as defined in the BLM Visual Resource Inventory Handbook, H-8410-1. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and length of time that negative intrusions are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment length and not common to other rivers in the geographic region.

Segment 2. The scenic value of the upper Klamath River Canyon has been classified as Scenic Quality A, BLM's highest scenic classification (BLM 1977). The outstandingly remarkable scenic value is predominantly due to unique landform, diverse vegetation, water, and lack of negative cultural modifications. The high desert canyon represents a transition from a mountainous to desert landscape as it crosses the Cascade Range, creating the unusual, varied scenery. The upper Klamath River Canyon is the nearest high desert canyon available to west coast population centers; the Owyhee is the next closest.

The steep-walled, layered basalt canyon is the predominant visual element in the region, as it rises up to 1,000 feet above the river. It cuts across the southeastern corner of the surrounding plateau, exhibiting considerably more landform variety than the plateau, due to its steep canyon slopes with large rock outcroppings in the form of vertical basalt cliffs, talus slopes, and rock slides. Vegetative variety, predominantly ponderosa pine with some oak in this segment, is much more diverse than the surrounding plateau due to the variety of elevations, aspects, and slopes. The Klamath River itself enhances the visual variety in the canyon; as it flows through the deep canyon, it changes from slack, slow-flowing water in the wider areas to a rushing torrent of cascading whitewater through narrow rocky walls making it a dominant factor in the landscape.

Landform variety of the upper Klamath River Canyon.

Negative cultural modifications, such as roads, powerlines, and developments, are not seen by the casual observer along the river in segment 2. The strong sense of cultural heritage, predominantly from historic Native American use in the area, combined with scenic beauty of the canyon draws visitors from outside the region. The canyon provides exceptional opportunities to view wildlife or wildflowers. The area's remoteness and steep topography provides visitors with uncrowded and natural aesthetic experiences and a strong sense of enclosure, not usually available at the more popular and famous national parks, monuments, and rivers in the region. The scenery compares with the Rogue River's wild and scenic designated sections, although some rating factors, such as landform variety compared to immediate surrounding areas, vegetative diversity, and seasonal color variations, even exceed those on the Rogue.

Segment 3. The scenic value in segment 3 has also been classified as Scenic Quality A by the BLM. The scenic value in this segment is also outstandingly remarkable for similar reasons as those given for segment 2—landform, vegetative diversity, and water. In addition, the presence of positive cultural modifications enhances the scenic value. The unique and diverse landform is characterized by narrow flood plains, steep rock walls, large rock outcroppings, steep angular buttes, and round or flat-topped ridges. Landform variety is much more diverse than that of the surrounding plateau due to steep canyon slopes with rock outcroppings in the form of vertical basalt cliffs, talus slopes, and rock slides. Vegetative variety is more diverse than on the surrounding plateau and is different than that in segment 2. Segment 3 is primarily forested by oak trees and has more grass, reeds, and shrubs than are seen upstream. The Klamath River increases the visual variety of the canyon, as it drops gradually, forming a series of pools and rapids. The canyon widens in segment 3, allowing open views that add to visual variety.

The strong sense of cultural heritage, exhibited in historic ranches and pastures, historic Klamath Hot Springs Resort, and old bridges, combined with the scenic beauty of the canyon, draws visitors from outside the region. The canyon provides exceptional opportunities to view wildlife or wildflowers. The area's remoteness and steep topography provides visitors with an uncrowded and natural aesthetic experience, not usually available at the more popular and famous national parks, monuments, and rivers in the region. The scenery in segment 3 compares with, and sometimes exceeds, the Rogue River's wild and scenic designated sections.

Geologic Resources

Eligibility Criteria. The river or the area within the river corridor contains an example(s) of a geologic feature, process, or phenomena that is rare, unusual, one-of-a-kind or unique to the geographic region. The feature(s) may be in an unusually active stage of development, represent a "textbook" example and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial and other geologic structures).

Segment 2. There are some spectacular high basalt and andesite cliffs with columnar jointing, localized outcrops of white diatomaceous earth (clay), and landslide features visible from the river; however, they are significant features, and not outstandingly remarkable as compared to similar values in the region.

Segment 3. There are some good examples of columnar basalts, andesites, and weathered tuff cliffs visible from the river. Although these features are scenic, they are neither rare nor unique to the region and therefore are not considered outstandingly remarkable.

Other Similar Values

Eligibility Criteria. While no specific evaluation guidelines have been developed for the "other similar values" category, it is assumed that districts will assess other river-related values in a manner consistent with the foregoing guidance - including, but not limited to hydrologic, ecologic/biologic diversity, and scientific study opportunities.

Segment 2. It has been determined that there are no values other than those previously mentioned in segment 2 that are outstandingly remarkable. The water quality occasionally does not meet Oregon State water quality standards and therefore is not considered either an outstanding or a significant value. The ecologic/biologic diversity is at least regionally significant, since it supports the diversity of wildlife described in the wildlife and fish sections of this chapter. This is due in part to the fact that the Klamath River bisects the Cascade Range. There are significant opportunities for scientific study of the prehistoric values in this segment, which are discussed in the prehistoric section in this chapter.

Segment 3. The water quality occasionally does not meet California State water quality standards so it is not considered either an outstanding or a significant value. The ecologic/biologic diversity is at least regionally significant, since it supports the diversity of wildlife described in the wildlife and fish sections of this chapter. This is due in part to the fact that the Klamath River bisects the Cascade Range. There are significant opportunities for scientific study of historic (specifically the Ghost Dance site) values, which are discussed in the historic section in this chapter.

Chapter 4—Classification

Introduction

This chapter discusses the three classification categories used for eligible rivers or river segments (wild, scenic, recreational); the criteria considered for each classification category; and the classification determination of segments 2 and 3 of the upper Klamath River. Segment 1 was determined to be ineligible in chapter 3; however, its highest potential classification is summarized in this chapter for report completeness and information purposes.

After determining a river's eligibility for inclusion in the National Wild and Scenic River System, it must be classified according to the category—wild, scenic, or recreational—that best fits each eligible segment. These terms can be misleading—a "scenic" river may have been designated for reasons other than scenery, and a "recreational" river doesn't necessarily have outstandingly remarkable recreational resources. Classification is based on the degree of naturalness and extent of development of the river and its adjacent lands as they exist at the time of the study.

Classifying a study river as wild, scenic, or recreational does not segregate or withdraw the subject lands, but rather recommends a level of interim management on Federal lands in the study area until a decision on designation is made by Congress. Guidance provided in the 1982 Final Revised Guidelines for Eligibility, Classification, and Management of River Areas will be used for interim management. If Congress designates a river or river segment, it will be managed according to how it is classified. Congress may classify a river segment at or below the highest level for which it qualifies. Specific management strategies may vary according to classification, but would be designed to protect and enhance the outstandingly remarkable values of the river area. These specific management strategies are formulated during development of the management plan, required within three full fiscal years of designation (Section 3(d)(1), Wild and Scenic Rivers Act).

Classification Categories

The three classification categories for eligible rivers are defined in Section 2(b) of the 1968 National Wild and Scenic River Act as:

(1) **Wild river areas**—Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

(2) **Scenic river areas**—Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

(3) **Recreational river areas**—Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

A wild river would be a very undeveloped river with limited access. A scenic classification would be applied to a river or river segment that is more developed than a wild river and less developed than a recreational river. A recreational classification would be appropriate in developed areas, such as where a river runs parallel to roads or railroads with adjacent lands that have agricultural, forestry, commercial, or other developments, provided that the waterway remains generally natural and riverine in appearance.

Classification Criteria

Water quality, water resources development, shoreline development, and accessibility are the criteria that are considered when determining classification. Each criterion is important, but their collective intent is more important. Although each classification permits existing development, the criteria do not imply that additional inconsistent development is permitted in the future. Developments that are compatible with designation would be allowed, provided they are carried out in an environmentally sound manner. Table 4-1 describes the criteria of each classification category in greater detail.

Classification Determination

Segments 1, 2, and 3 do not meet all the criteria for a wild classification—water quality does not always meet or exceed Federal criteria, shorelines do not appear to be essentially primitive with little or no evidence of human activity, and all segments are accessible by road within the river area. Segment 1 does not meet all the criteria for a scenic classification because of the water resource and shoreline developments, so discussion for segment 1 refers only to recreational classification criteria (table 4-1). Classification determinations for segments 2 and 3 were made using the criteria established for scenic and recreational classification.

Table 4-1. Classification Criteria for Wild, Scenic, and Recreational Rivers

Attribute	Wild	Scenic	Recreational
Water Quality	Meets or exceeds federal criteria or federally approved state standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	No criteria prescribed by the Wild and Scenic Rivers Act. The Clean Water Act of 1977 made it a national goal that all waters of the United States be made fishable and swimmable. Therefore, rivers will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable federal and state laws.	
Water Resources Development	Free of impoundment.	Free of impoundment.	Some existing impoundments or diversion. The existence of low dams, diversions or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural values, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity. The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.

Table 4-1. Classification Criteria for Wild, Scenic, and Recreational Rivers (continued)

Attribute	Wild	Scenic	Recreational
Accessibility	Generally inaccessible except by trail. No roads, railroads, or other provisions for vehicular travel within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.

Source: Final Revised Guidelines for Eligibility, Classification, and Management of River Areas. Federal Register, September 7, 1982.

Segment 1

Most of segment 1 from the J.C. Boyle Dam to the powerhouse was determined to be ineligible for inclusion in the NWSRS; however it is briefly discussed here for the reader's information. Construction of the above-ground flume and access road between the J.C. Boyle Dam and Powerhouse resulted in substantial modification of portions of the west river bank. Portions of the west side are now fill-slope with the toe of the slope stabilized using large boulders, which have altered the natural appearance of the waterway. Spillway construction in segment 1 and placement of large basalt boulders on the west river bank to prevent erosion when water is released from the spillway also resulted in modifications of the waterway. The waterway does not appear natural and riverine because of the major modifications to it; therefore, this portion of segment 1 does not meet the criteria for water resources development—"Some existing impoundments or diversion. The existence of low dams, diversions, or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance." Segment 1 would meet the criteria for water quality, shoreline development, and accessibility under the recreational classification.

Segment 2

This portion of the upper Klamath River is relatively unpolluted, but Federally-approved State water quality standards, set by the Oregon Department of Environmental Quality for water in the Klamath River, are occasionally not met. This is especially apparent during periods of low summer flow, when upstream water quality also does not meet Federal standards (see Water Resources in chapter 2 for further discussion); however, this does not have a detrimental effect on use of the river.

Minor rock irrigation diversions (low rock walls that stretch from the shoreline to the center of the river channel and in some instances across the river) are the only water resources developments present in this segment. Water flows freely across these rock walls, even at low flow, and they do not contrast negatively with the surrounding landscape. No other water resources developments are present in segment 2.

Short stretches of two dirt roads are visible on either side of the river; however, both roads are generally well screened from view by topography and vegetation. A semi-primitive campsite, several primitive campsites, and remnants of historic activities are visible, but not obvious, from the river. The only building that is visible from the river is an aesthetically appealing historic log cabin, which is partially screened from view. Limited livestock grazing occurs on floodplains next to the river. A wood pole powerline that is mostly screened from view by vegetation and topography parallels the upper portion of this

Rock irrigation diversion in segment 2.

segment. A small electric power substation, situated above the immediate river environment, is visible for a short reach of the river in the lower part of segment 2.

The river is accessible in places by road, but these roads do not cross the river. These roads are essentially inconspicuous and well-screened from view. Where roads are visible from the river, they are limited to short stretches that are, for the most part, away from the immediate river environment. Primary use of these roads is for recreational activities and access by land owners.

Using the criteria set forth in the Wild and Scenic Rivers Act, segment 2 meets the criteria for a scenic classification (table 4-2). This segment is free of impoundments, the shoreline is still largely primitive and undeveloped, no substantial evidence of human activity is present, and it is accessible in places by dirt roads. Although the northern boundary of segment 2 was identified in chapter 1 as being at RM 219.5, based on both the eligibility and the criteria for scenic classification, this boundary could be moved up to 0.8 mile upstream during development of the management plan if the river is designated.

Segment 3

This portion of the upper Klamath River is relatively unpolluted, but Federally-approved State water quality standards, set by the California State Water Resources Control Board, are occasionally not met. This is especially apparent during periods of low summer flow, when upstream water quality also does not meet Federal standards (see Water Resources in chapter 2 for further discussion); however, this does not have a detrimental effect on use of the river.

Several minor rock irrigation diversions (low rock walls that stretch from the shoreline to the center of the river channel) are the only water resource developments present in this segment. Water flows freely across these rock walls, even at low flow, and they do not contrast negatively with the surrounding landscape. No other water resource developments are present in segment 3.

A single wood pole powerline and Topsy Road, mostly screened from view by vegetation, parallel the river. Structures on the two operating cattle ranches within this portion of the river are usually screened from view. When they are seen, they are aesthetically appealing because of their rustic appearance.

Table 4-2. Upper Klamath River Classification Summary

Criteria	Segment 2	Segment 3
WILD		
Water Quality		
• Meets or exceeds Federal Criteria or Federally approved State standards	Doesn't Meet	Doesn't Meet
Water Resource Developments		
• Free of Impoundments	Meets	Meets
Shoreline Development		
• Essentially primitive with little or no evidence of human activity	Doesn't Meet	Doesn't Meet
• A few inconspicuous structures	Meets	Meets
• Limited livestock grazing or hay production	Meets	Doesn't Meet
• Little or no evidence of past timber harvest and no ongoing timber harvest	Meets	Meets
Accessibility		
• Inaccessible except by trail	Doesn't Meet	Doesn't Meet
• No roads or railroads within the river area	Doesn't Meet	Doesn't Meet
SCENIC		
Water Quality		
• Water quality improvement plan exists	Meets	Meets
Water Resource Developments		
• Free of impoundments	Meets	Meets
Shoreline Developments		
• Largely primitive and undeveloped with no substantial evidence of human activity	Meets	Meets
• Presence of small communities, dispersed dwellings or farm structures	Exceeds	Meets
• Livestock grazing or hay production	Meets	Meets
• Evidence of past or present timber harvest, but the forest appears natural from the riverbank	Exceeds	Exceeds
Accessibility		
• Accessible in places by road	Meets	Meets
• Roads may occasionally reach or bridge the river	Meets	Meets
• Existence of short stretches of conspicuous road or longer stretches of inconspicuous road or railroad within the river area	Meets	Meets

Table 4-2. **Upper Klamath River Classification Summary (continued)**

Criteria	Segment 2	Segment 3
RECREATIONAL		
Water Quality		
• Water quality improvement plan exists	Meets	Meets
Water Resource Development		
• Some existing impoundments, low dam diversions, or waterway modifications provided the waterway remains generally natural and riverine in appearance	Exceeds	Exceeds
Shoreline Development		
• Some development and substantial evidence of human activity	Exceeds	Exceeds
• Presence of extensive residential development and a few commercial structures	Exceeds	Exceeds
• Developed for a full range of agricultural and forestry uses	Exceeds	Exceeds
• Evidence of past and ongoing timber harvest	Exceeds	Exceeds
Accessibility		
• Readily accessible by road or railroad	Exceeds	Exceeds
• Parallel roads or railroads on one or more banks, as well as bridge crossings and other river access points	Exceeds	Exceeds

Meets—Meets the criteria for this classification
Doesn't Meet—Does not meet the criteria for this classification
Exceeds—Exceeds the criteria for this classification

Livestock grazing and limited hay production occur on the floodplains next to the river. Six designated fishing access points (five in segment 3 and one downstream of the boundary) with parking areas and toilets on private property are provided by Pacific Power & Light Company. These gated access points are along the road and are not visible from the river. Two low-profile wooden bridges cross the river. They do not deviate from or contrast negatively with the surrounding landscape and are only used by the two ranches in segment 3.

The east side of the river is accessible by road. Although Topsy Road parallels the entire length of segment 3, it is inconspicuous and well-screened from the river. Access is primarily limited to the fishing access points on private property. Primary use of this road is for recreational activities and access by land owners.

Using the criteria set forth in the Wild and Scenic Rivers Act, segment 3 meets the criteria for scenic classification (table 4-2). This segment is free of impoundments, the presence of grazing and hay production is acceptable, the shoreline is still largely primitive and undeveloped, dispersed dwellings or farm structures are acceptable, bridges are permitted, and the river is accessible in places by a road.

Ranch structure in segment 3.

Chapter 5—Alternative Management Strategies

Introduction

This chapter describes the issues and concerns; land and water use plans in the study area; and possible alternative management strategies for wild and scenic values. The strategies and the impacts of those strategies are arrayed in tables at the end of the chapter. The three alternative management strategies are: 1) Current Management, 2) Current Management Intensified, and 3) Wild and Scenic Designation.

Issues and Concerns

The BLM conducted several information and public involvement activities during development of the upper Klamath River eligibility and suitability study. These activities included open houses, public meetings, briefings for interested groups and agencies, public comment periods, and news releases. (See Background and Schedule in Chapter 1.) A total of 110 responses were received during the comment periods. Several other comments, in writing and in person, were received later. The comments helped in the identification of many issues and concerns related to resource values, land uses, and economics. This issue identification assisted in development of potential alternative management strategies for protection of wild and scenic values.

Many comments questioned whether designation was necessary to protect resource values—such as cultural, historic, recreational, scenic, threatened and endangered species, wildlife habitat, deer/elk winter range, and wild trout fisheries—or whether they are adequately protected under current management actions. Other comments were related to the effects that designation would have on land uses on both private and public lands, including access improvements, grazing, timber harvest, hydroelectric or other water resource developments, and recreational developments and facilities. Concerns were also raised about the compatibility of land uses with resource enhancement and protection, such as between whitewater boating and wild trout habitat improvements, or between recreational use and the degradation of cultural and scenic resources.

Many comments that were received are beyond the scope of this study. These include water quality issues, economic issues related to hydroelectric development, potential impacts on habitat and recreational opportunities due to construction and operation of the proposed Salt Caves hydroelectric project, and potential conflicts with the Klamath River Basin Compact and with existing withdrawals and reservations. The BLM does not monitor water quality. Water quality studies by the Oregon DEQ on upper Klamath River are ongoing, and control strategies to improve water are being developed. The Federal Energy Regulatory Commission's Draft EIS contains an economic analysis and an analysis of impacts from the proposed hydroelectric project, and should be consulted for further information on these issues. The Compact, withdrawals, and reservations, like the Wild and Scenic Rivers Act, resulted from an Act of Congress. Any conflicts between these laws due to designation of the Upper Klamath river, must be identified through legal analysis and resolved through Congressional action.

Existing Land and Water Use Plans

The BLM Jackson-Klamath Management Framework Plan (MFP) was approved in May 1980 by the Oregon BLM State Director. This land use plan guides management of public lands in segments 1 and 2. A resource management plan which will replace the MFP is currently being developed. BLM land use plans are periodically reviewed and management prescriptions are subject to change when appropriate.

The BLM Redding MFP was approved in December 1982 by the California BLM State Director. This land use plan guides management of public lands in segment 3. A resource management plan which will replace the MFP is currently being developed.

The BLM manages 3,500 acres of revested Oregon and California lands in the study area (segments 1 and 2) in accordance with the O&C Sustained Yield Act of 1937.

A management plan will be developed by the State of Oregon covering the newly designated (1988) Klamath Scenic Waterway in accordance with the Oregon State Scenic Waterways Act (ORS 390.835 to 390.845). This will affect all land within 1/4-mile of the bank on each side of the river, from the John C. Boyle Dam Powerhouse downstream to the Oregon-California border, except land that, in the Oregon Transportation Commissions's judgment, does not affect the view from the waters within a scenic waterway. This act provides more protection for resource values on private property than do BLM resource management plans. Federal actions on public lands could override the State's protective measures; however, the BLM is required to manage its lands consistent, to the greatest extent practicable, with state and local plans.

The Goal 5 element (Open Spaces, Scenic and Historic Areas, and Natural Resources) of the Klamath County Comprehensive Plan affects management of private lands in segments 1 and 2. The purpose of Goal 5 is to ensure open space, protect scenic and historical areas and natural resources, and promote healthy and visually attractive environments in harmony with the natural landscape through inventory, identification of conflicting uses, and implementation. Klamath County's Goal 5 element is currently being updated to incorporate additional information and to be consistent with the amended State Scenic Waterways Act.

Most private land in segment 3 is zoned as a General Agricultural District in the Siskiyou County Comprehensive Plan. Land uses and developments in this district must be related to agricultural enterprises. Several parcels in segment 3, zoned as a Timberland Preserve Zone District, are used for timber growth and harvest.

The Klamath River Basin Compact, effective in 1957, specifies the use and distribution of water in the upper Klamath River Basin. (See Chapter 2, Water Rights and Chapter 1, Applicable Laws and Regulations).

Table 5-1. Existing Designations on the Upper Klamath River

Designation	Purpose
BLM	
Segments 1, 2 as the Klamath River Special Recreation Management Area (map 2-3)	To provide semi-primitive motorized recreational opportunities
Segments 1, 2, 3 as VRM Class II and Scenic Class A	To preserve existing character of the landscape
Segment 3 as Klamath River Prescription Area	To provide roaded natural experience opportunities
Segment 1 as Protected Falcon Habitat	To protect cliff areas for falcon habitat
National Park Service	
Segments 1, 2, 3 in Nationwide Rivers Inventory	Potential wild, scenic, or recreational rivers to be studied further
State Fish and Game Agencies	
Segments 1, 2 as Wild Rainbow Trout Stream, Segment 3 as Wild Rainbow Trout Area	To protect stocks of resident rainbow trout trout
State of Oregon	
Segments 1, 2 as Klamath Scenic Waterway	To protect scenic, fishery, wildlife, and recreational values
Klamath County	
Segments 1, 2 as Significant Resource Area	To protect and preserve hydro energy, potential scenic waterway, fish and wildlife, and cultural resources for present and future generations
Northwest Power Planning Council	
Segments 1, 2 as Protected Areas	To protect resident fish (rainbow trout) and wildlife (black-tailed deer)
Pacific Coast American Peregrine Falcon Recovery Team	
Segments 1, 2, 3 as Management Area	To protect habitat for recovery of peregrine falcon

Various portions of the upper Klamath River have designations applied to them based on certain resource values. These designations, shown in table 5-1, have been developed by Federal, State, and local agencies, and special interest groups.

In 1986, the Oregon Chapter of the Sierra Club nominated the Klamath Canyon from rim to rim and from the J.C. Boyle Powerhouse to the Oregon-California border for consideration for Area of Critical Environmental Concern (ACEC) designation during the BLM's planning process. At that time, the affected lands were under the jurisdiction of the Medford District BLM. In 1988, the Medford BLM staff evaluated the ACEC nomination and prepared a preliminary report of the findings for the Lakeview District BLM's review and evaluation. Potential ACEC status and appropriated interim management, if any, will be determined by the Lakeview District Manager in the BLM planning process.

Under Management strategy 2 (described below), the canyon would be designated an ACEC. The ACEC boundary could be extended into California through the Redding Resource Area's resource management plan.

ACEC designations highlight areas where special management attention is needed to protect and prevent irreparable damage to important historic, cultural, and scenic values; fish or wildlife resources; or other natural systems or processes. The ACEC designation indicates to the public that the BLM (a) recognizes an area has significant values, and (b) has established special management measures to protect those values.

Alternative Management Strategies

Three alternate management strategies for wild and scenic values were formulated with consideration given to publicly-derived issues. The objective of these strategies is to properly protect and enhance the outstandingly remarkable values identified in chapter 3, while allowing existing land uses and activities to continue, whenever possible. The effects of a hydroelectric development scenario in the study area are analyzed in the Draft EIS for the proposed Salt Caves project. The three alternative management strategies analyzed here are Current Management, Current Management Intensified, and Wild and Scenic Designation.

The following management objectives would be common under all strategies. The BLM would continue as the principal administrative agency, in cooperation with the appropriate State and local agencies. Private land use within 1/4-mile of the river between the J.C. Boyle Powerhouse and the state line would have to be compatible with State and local plans designed to protect resource values in the State Scenic Waterway. Proposed new private land uses or developments would be subject to approval of the Oregon Transportation Commission. BLM land uses would also be compatible with State Scenic Waterway guidelines to the extent that they would be consistent with Federal laws, regulations, and policies.

There is presently no specific plan for land acquisition in the study area by the BLM, but under any of the management strategies, land could be acquired from willing sellers or through exchange, donation, or jurisdictional transfer. Acquisition would be most actively pursued under strategy 3. Under section 6(b) of the Wild and Scenic Rivers Act, acquisition of fee title by condemnation would not be allowed in strategy 3, since more than 50% of the river area is now owned in fee title by the United States. The use of condemnation is not precluded when necessary to clear title or to acquire scenic or other such easements, as are reasonably necessary to give the public access to the river.

The general management strategy for each alternative is described below. Table 5-2 shows examples, for comparative purposes, of specific management actions that could occur under each alternative. The table contains comparative examples only, and is not meant to be all-inclusive.

Strategy 1, Current Management

Strategy 1 would be a continuation of Federal, State, and local management actions, under authorities described in the Applicable Laws and Regulations section of this chapter. Various administrative designations exist to protect the resources in the study area (table 5-1); however, long-term protection of river values on public lands would not be guaranteed because BLM designations could be enhanced, diminished, or revoked at any time through the BLM land use planning process. Under strategy 1, most developments, timber harvest, grazing, and mineral exploration could continue or increase, subject to existing laws, restrictions, and land use plans.

Strategy 2, Current Management Intensified

Strategy 2 would be similar to strategy 1, but additional administrative designations and actions, to be determined in a BLM resource management plan, could be implemented to enhance resource protection compared to Current Management. BLM designations could be enhanced, diminished, or revoked through an amendment to their land use plans. Such an amendment would require public involvement. BLM would seek to improve protection of resources on private land by developing cooperative agreements with landowners. Under strategy 2, certain developments, grazing, and mineral exploration could continue, subject to existing laws, restrictions, and land use plans. Timber harvest on BLM-administered land would be administratively withdrawn under this strategy. As with strategy 1, long-term protection of river values would not be assured.

Strategy 3, Wild and Scenic Designation

Strategy 3 would result from Congressional designation, which would emphasize long-term protection and enhancement of outstandingly remarkable resources. Licensing and authorization of any proposed hydroelectric project would be subject to limitations of the Wild and Scenic Rivers Act. A wide range of management opportunities, to be defined during formulation of a river management plan, would be available for management, protection, and enhancement of outstanding and significant resource values. State and local agencies could have increased budgetary and policy-making responsibility in management of the river. BLM would seek to develop cooperative agreements; acquire scenic, conservation, or other easements; or acquire fee title land from willing sellers to facilitate mangement of the area and enhance resource protection on private property. Land exchanges or jurisdictional transfer or U.S. Forest Service (USFS) and/or State lands would be pursued more actively than under the other strategies. Most developments and timber harvest with its economic benefits would be restricted or precluded, grazing would be diminished, and mangement costs for acquiring and managing additional lands would increase over strategies 1 and 2.

Table 5-2 arrays the three strategies and some examples of possible managment actions that could occur. This table is not all-inclusive, but presents a partial representation of each potential scenario.

Impacts to the natural resources and to land uses and activities will occur regardless of which alternative management strategy is implemented. Table 5-3 depicts those impacts as accurately as possible, given the limitations mentioned above.

Table 5-2. Alternative Management Strategies for Wild and Scenic Values

	1 (Current Management)	2 (Current Management Intensified)	3 (Wild and Scenic Designation)
LAND OWNERSHIP/ MANAGEMENT	Land owned by BLM, USFS, State of Oregon, and private landowners; management would continue under existing policies, regulations, laws.	Same as Current Management plus BLM would seek to develop cooperative agreement with private landowners; designate as Area of Critical Environmental Concern.	Same as Curent Management Intensified plus BLM would manage any conservation (or other) easements donated by PP&L for mitigation during FERC relicensing of J.C. Boyle project, and/or scenic (or other) easements acquired from willing landowners; State and local agencies could have increased fiscal responsibility; BLM would manage fee title land acquired from willing landowners; land exchanges or jurisdictional transfer of USFS and/or State land to BLM.
LAND USES–PUBLIC			
Timber	Timber harvest would be allowed.	Timber harvest would be administratively withdrawn.	Same as Current Management Intensified.
Grazing	Spring and summer grazing would be allowed.	Allotment Management Plan would be developed.	Same as Current Management Intensified except BLM would develop cooperative agreement with landowners to limit grazing season; emphasis would be on riparian habitat management.
Energy (Existing)	Existing hydroelectric facilities, power withdrawals, and rights-of-way would be maintained; J.C. Boyle and Copco projects would be relicensed in 2006.	Same as Current Management.	Same as Current Management.
Energy (New)	New hydroelectric facilities would be inconsistent with existing BLM land use plans in segments 2 and 3, and with State of Oregon law, (ORS 390.835) in segment 2.	Same as Current Management.	Same as Current Management, but new hydroelectric projects would be prohibited in segments 2 and 3 by Federal legislation.
Minerals	Placer mining would be prohibited by State of Oregon on waters within segment 2 (ORS 390.835); surface disturbance from prospecting or mining would be prohibited by State of Oregon within 1/4-mile of each river bank in segment 2 (ORS 390.845); mining would not be allowed in segment 3 during the period of study for eligibility and suitability.	Same as Current Management.	Same as Current Management except administrative withdrawal for minerals could continue in segment 3.
OUTSTANDINGLY REMARKABLE RESOURCE VALUES	Resource values would be protected under existing administrative designations. These designations could be enhanced, diminished, or revoked at any time by an amendment to BLM's land use plan. Land use plans would be reviewed and subject to change periodically.	Same as Current Management, but administrative designations under this alternative would be slightly more protective.	Resource values would be protected by one comprehensive management plan that would ensure long-term protection and enhancement of outstandingly remarkable values. State and local agencies could have greater budgetary and policy making responsibility in the management objectives and actions. BLM's management policies could be expanded to include acquired lands.

Table 5-2. Alternative Management Strategies for Wild and Scenic Values (continued)

	1 (Current Management)	2 (Current Management Intensified)	3 (Wild and Scenic Designation)
Recreation	Management would continue under existing plans for semi-primitive motorized opportunities in segment 2 and roaded natural opportunities in segment 3; dispersed recreation; voluntary registration for private whitewater boaters; minimal management presence; no interpretive facilities; semi-primitive recreation facilities.	Same as Current Management plus increased presence by BLM; policy revision; access associated with recreational activities would be improved.	Same as Current Management plus further increased presence; revision of permitting system; some improved recreation facilities; possible interpretive facilities; existing put-ins/take-outs would be improved, new put-ins/take-outs could be created.
Scenic Resources	Visual Resource Management Class II.	Same as Current Management.	Same as Current Management plus increased restrictions on activities that could degrade scenic resources.
Fish & Wildlife	Fish & wildlife management would continue under existing plans with emphasis on deer winter range.	Same as Current Management plus habitat management plan would be developed.	State fish & wildlife agencies would intensify monitoring; BLM would allocate additional funding for wildlife habitat improvement; cooperation would be increased between BLM and State fish & wildlife agencies.
Threatened, Endangered, Sensitive Species	Existing monitoring and protection of known T&E species would be continued.	Level of monitoring of T&E species and their habitats would be increased, new management goals would be developed as necessary.	Same as Current Management Intensified plus T&E species enhancement activities would be implemented.
Cultural Resources	Existing monitoring and protection of prehistoric and historic values on public land would be continued.	Same as Current Management plus monitoring and protection of prehistoric and historic values by BLM on private land would be accomplished through cooperative agreement(s).	Same as Current Management Intensified plus eligible prehistoric sites on private land would be nominated to National Register of Historic Places; private land with significant sites could be acquired from willing sellers.
WATER RESOURCES			
Water Quality	State agencies would continue to monitor water quality; BLM would continue to assess resource activities that could affect water quality.	BLM would work closely with State water resource agencies to ensure water quality standards and monitoring systems were workable and adequate.	Same as Current Management Intensified plus BLM would contribute towards a cooperative agreement between agencies, industries, and landowners to accelerate water quality improvement.
Water Flow[1]	PP&L would continue to regulate flows for power production.	Same as Current Management.	Same as Current Management plus BLM would seek to enhance recreation and fish and wildlife values during relicensing of J.C. Boyle and Copco projects.

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[1] All current water laws and regulations would remain in effect and would not be affected by any action in any of the Alternative Management Strategies.

Table 5-3. Impacts of Management Strategies

	1 (Current Management)	2 (Current Management Intensified)	3 (Wild and Scenic Designation)
LAND OWNERSHIP/ MANAGEMENT	Developments would be allowed; management costs would not increase.	Developments would be allowed with slightly increased restrictions; management costs would increase slightly.	Certain developments would not be allowed; management on conservation, scenic, and other easements would be more compatible with public land management; consistency would be achieved under a comprehensive management plan; State and local agencies could have increased fiscal and management responsibility; BLM's costs would be higher than under Current Management Intensified; consolidation of land ownership to BLM would enable more efficient management of the designated river.
LAND USES - PUBLIC			
Timber	Timber would remain in BLM timber base.	Timber harvest would be curtailed; timber-based revenues would be curtailed.	Same as Current Management Intensified.
Grazing	No change in grazing opportunities would occur; riparian habitat would continue to be diminished.	Range resources would be more efficiently managed and utilized.	Same as Current Management Intensified plus forage competition between livestock and wildlife would be diminished; range condition and riparian habitat would be enhanced.
Energy (Existing)	Clean hydroelectric energy would continue to be generated; whitewater rafting experiences would continue to be enhanced from water releases for power generation. It is impossible to predict which benefits or drawbacks would occur upon relicensing the J.C. Boyle and Copco projects in 2006.	Same as Current Management.	Same as Current Management.
Energy (New)	If new hydroelectric facilities were built, the opportunity to increase the amount of clean hydroelectric energy would be enhanced. Other impacts would be addressed in a project-specific EIS.	Same as Current Management.	Opportunities for additional hydroelectric power from new facilities would be foreclosed.
Minerals	No impacts would occur to mineral resources based on past and anticipated future activity.	Same as Current Management.	Same as Current Management.
LAND USES - PRIVATE			
Timber, Grazing, Agriculture, Minerals	No federally-imposed changes would occur in the opportunities for timber harvest, grazing, agricultural practices, or mineral extraction on private land.	Same as Current Management.	Same as Current Management.

Table 5-3. Impacts of Management Strategies (continued)

	1 (Current Management)	2 (Current Management Intensified)	3 (Wild and Scenic Designation)
OUTSTANDINGLY REMARKABLE RESOURCE VALUES	Short-term protection of resource values on public land would continue; long-term protection of resource values on private land within 1/4-mile of the river would occur in segments 1 and 2 under the State Scenic Waterways Act.	Same as Current Management.	Long-term protection of resource values on public land would occur under the Wild and Scenic Rivers Act; long-term protection of resource values on private land in segments 1 and 2 would occur under the State Scenic Waterways Act.
Recreation	Visitor use days associated with whitewater boating would continue to slightly increase annually, diminishing recreation experience and opportunities for solitude; degradation of recreation sites could be accelerated.	Visitor use associated with all recreation activities would increase with improved access, diminishing opportunities for solitude; increased BLM presence would facilitate activities at the BLM put-in, slow down the degradation of recreation sites, and ensure adherence to policies.	Same as Current Management Intensified with opportunities to enhance recreation activities based on actions and strategies in the management plan; visitor use would increase, diminishing opportunities for solitude; recreation experience could be enhanced from revision of the permitting system and additions and improvements to recreation facilities.
Scenic Resources	Scenic values could be slightly diminished from increased recreation use, timber harvest, developments.	Same as Current Management.	Restrictions on developments and land uses could decrease degradation of scenic resources.
Fish & Wildlife	Wildlife habitat (including T&E) would not change or would be slightly diminished due to forage competition from livestock; fish habitat would not change.	Some types of fish and/or wildlife habitat could be slightly enhanced as a result of implementation of a habitat management plan.	Fish and wildlife populations could be enhanced from increased funding and management from State agencies and increased State and Federal cooperation.
Cultural Resources	Unintentional damage to cultural resources on public and private land would continue from recreation and other activities.	Same as Current Management plus new cultural information would be added to existing data from monitoring on private land, protection of sites on private land could be enhanced.	Same as Current Management plus National Register of Historic Places would be enhanced from addition of eligible sites on private property; unintentional damage to cultural resources on private land would decrease.
Water Resources	No change would occur to water quality or flow, unless flow was adjusted from relicensing of J.C. Boyle project.	Cooperation of Federal, State, and local agencies could improve water quality.	Same as Current Management Intensified plus potential water flow changes from relicensing of J.C. Boyle and Copco projects could enhance recreation, fish and wildlife, improvement of water quality could be accelerated.

Chapter 6—Suitability

Introduction

This chapter discusses the suitability of the upper Klamath River for inclusion in the National Wild and Scenic Rivers System, as required in section 4(a) of the Wild and Scenic Rivers Act. A review of the eligibility and classification is included in this chapter to enhance the suitability discussion.

The following were considered when determining suitability:

- How to best protect the outstandingly remarkable values while allowing for the continuation of existing land uses and activities.
- Whether the river or river segment would be a worthy addition to the National Wild and Scenic Rivers System.
- Whether the river or river segment could be effectively managed as a designated river.

Administration, budgetary constraints, and political considerations are a part of suitability, but should not be the primary basis for determination. The purpose of designation is to protect the river, its immediate environment, and the outstandingly remarkable values for the benefit and enjoyment of future generations (section 1(b) of the Wild and Scenic Rivers Act).

Synopsis of Eligibility and Classification

As discussed in chapter 3, most of segment 1 was determined to be ineligible for inclusion in the NWSRS. It is not free-flowing because of the modification of the waterway during construction of the concrete flume for the John C. Boyle Dam-Powerhouse system and significant water diversion. Segments 2 and 3 are free-flowing. Although the powerhouse causes the flows to fluctuate daily, the original volume of water that was diverted at the J.C. Boyle Dam is returned to the river bed at the powerhouse.

The outstandingly remarkable values in segment 2 were determined to be recreation, wildlife, fish, prehistoric, historic, and scenic values. Recreation, wildlife, fish, historic, and scenic values are outstandingly remarkable in segment 3. Segment 1 has outstandingly remarkable fish values. Chapter 3 contains descriptions of these values.

Classification is based on the degree of naturalness and extent of development of the river and its adjacent lands as viewed in its existing condition at the time of the study. Because of the major modifications of the waterway between the J.C. Boyle Dam and Powerhouse in segment 1, that section has not remained generally natural and riverine in appearance; therefore, it does not meet the criteria established for a wild, scenic, or even recreational classification. Neither segment 2 nor 3 qualifies for wild classification because they do not meet the standards for minimal accessibility and high water quality. Both segments 2 and 3 do meet the criteria for a scenic classification. A scenic river is free of impoundments, has shorelines that are largely primitive and undeveloped, and is accessible in places by roads. Chapter 4 discusses in detail how the classification for each segment was determined.

The outstandingly remarkable values, the degree of naturalness of segments 2 and 3 of the upper Klamath River and its unique character compared to other rivers in the region, characterize this section of river as a worthy addition to the national system. Segment 1 from the J.C. Boyle Dam to the powerhouse has outstandingly remarkable fish values, but with the substantial developments, diversion, and major modifications to the waterway, it would not be a worthy addition to the NWSRS.

Summary Comparison of Alternative Management Stratagies

The outstandingly remarkable and scenic values are currently adequately protected in the short term under various plans and designations. However, this protection could be enhanced, diminished, or revoked at any time through the BLM land use planning process. Protection and/or enhancement of these identified values would not be guaranteed under either strategy 1 or 2. Congressional designation under strategy 3, however, would provide for long-term protection of the river and its immediate environment. This protection would be specified in a comprehensive management plan, as required in the Wild and Scenic Rivers Act. Outstandingly remarkable and significant values on private land would be provided the highest level of protection through cooperative agreements, exchanges, and acquisitions under strategy 3.

Restrictions on land uses, activities, and major developments on BLM-administered land generally increase progressively from strategy 1 to 3. These activities and developments would be the most restricted under strategy 3. Under strategies 1 and 2, certain developments, such as proposed hydroelectric projects, would require a land use plan amendment and/or site-specific EIS before they could be allowed by the BLM. Proposed new land uses, activities, and developments within 1/4-mile of the river in segments 1 and 2 must be reviewed by the Oregon Transportation Commission before they take place.

The cost to manage the study area increases progressively from strategy 1 to 3. Costs would include project money, time and personnel, easement acquisition, and purchase of fee title land. Specific figures are highly variable depending on the strategy. State and local agencies could have a more active role in management decisions and a greater fiscal responsibility under strategy 3 than under any other strategy.

The geographic extent and level of BLM's management in the canyon would increase from strategy 1 to 3. Cooperative agreements; scenic, conservation, and other easements; land acquisition from willing sellers; and jurisdictional transfers or land exchanges would increase the geographic extent of BLM-administered land. Administrative designations (such as an Area of Critical Environmental Concern under strategy 2), legislation (such as Congressional designation under strategy 3), and additional personnel (such as a full-time river ranger) would increase the level of BLM's management of the upper Klamath River.

Under strategy 1, public participation on management actions and decisions in the study area would be restricted to site specific proposals under current plans. An amended or revised land use plan and river management plan would be developed under strategies 2 and 3, which would rely heavily on public and State and local agency participation and cooperation. The management plan under strategy 3 would be developed under authority of the Wild and Scenic Rivers Act of 1968.

Conclusion

It is concluded that a portion of segment 1 and all of segments 2 and 3 of the upper Klamath River are both eligible and suitable for inclusion in and manageable under the National Wild and Scenic Rivers System. In their current state, those portions of the upper Klamath River would be a worthy addition to the system. There are other alternatives that would protect the recreational, wildlife, fish, prehistoric, historic, and scenic values in the Klamath River Canyon; however, they would not ensure long-term protection of the river and its immediate environment.

This conclusion is based on the goal of providing protection and enhancement of the natural values which caused the river to be eligible for designation, while allowing existing uses to continue, to the extent possible. This assumption is consistent with the intent of the Wild and Scenic Rivers Act.

Economic effects of potential land uses that could be foreclosed or curtailed if the area were included in the national system, may also be considered in the decision by Congress to designate or not designate. Likely economic effects are analyzed in the hydroelectric development scenario presented in the FERC draft EIS, that was subject to public review and comment, for the proposed Salt Caves project.

Chapter 7—Preparers, Consultation, Glossary and References

Preparers and Reviewers

Name	Position	Qualification	Responsibilities
Study Team			
Carla Burnside	Archaeologist	B.A. Anthropology, Washington State Univ.; M.S. Anthropology, Univ. of Oregon; BLM, 1 yr.	Prehistoric, Historic, Transportation, Socioeconomics, Land Ownership
Ron Hicks	Wildlife Biologist	B.S. Wildlife Management, Humboldt State Univ.; USFS, 8 mos.; NPS, 8 mos.; USFWS, 18 mos.; Private, 1 yr.; NMFS, 18 mos.; BLM, 1 yr.	Fish, Wildlife, Vegetation, Water, Range
Cathy Humphrey	Team Leader	B.S. Geological Sciences, New Mexico State Univ.; BLM, 7 yrs.	Document Preparation, Technical Coordination, Public Involvement
Alison Poteet	Editorial Assistant	BLM, 5 yrs.	Clerical Assistance, Proofreading Assistance
Ken Reich	Outdoor Recreation Planner	B.S. Recreation Resources Management, Oregon State Univ.; Private, 9 mos.; BLM, 3 yrs.	Recreation, Scenic, Timber, Access

Name	Office	Title
Management		
Judy Ellen Nelson	Lakeview District Office	District Manager
W. Steve Sherman	Klamath Falls Resource Area Office	Area Manager
BLM Review and Consultation		
Scott Abdon	Salem District Office	Outdoor Recreation Planner
Bill Brooks	Oregon State Office	Hydrologist
Bill Cannon	Lakeview District Office	Archaeologist
Dr. Richard Hanes	Oregon State Office	Archaeologist
Art Oakley	Oregon State Office	Fisheries Biologist
Renee Snyder	Lakeview District Office	Public Affairs Officer/ Environmental Coordinator
Phil Stanbro	Oregon State Office	Chief, Planning and Environmental Coordination
Ken White	Oregon State Office	Outdoor Recreation Planner
Joe Williams	Redding Resource Area Office	Outdoor Recreation Planner

List of businesses, organizations, and agencies to whom copies of this document were sent

Businesses

A.B.L.E. Rafting
Adventure Connection
Adventures Whitewater
A.R.T.A.
All Outdoors Adventure Trips
American River Recreation
Beach's Jeweler's, Inc.
Bogatay's
Century 21
Columbia Plywood Corporation
Denman and Cooney, Attorneys at Law
Diment, Billings, and Walker, Attorneys at Law
Duncan, Weinberg, Miller, and Penbroke, Attorneys at Law
Eagle Sun, Inc.
Gaylord, Thomas, and Eyerman, P.C., Attorneys at Law
Great Out of Doors Rafting
Gregory Timber Corporation
Harmony Around the World
Headwater Adventures
Interagency Archaeological Services
J.W. Kerns Company
Jeld-Wen, Inc.
Jensen and Associates
Jolles, Sokol, and Bernstein, P.C., Attorneys at Law
Ken Warren Outdoors, Inc.
Klamath Consulting Service
Kingfishers Float Trips
Merten and Yugler, Attorneys at Law
Modoc Lumber Company
Morgon, Miller, and Blair, Attorneys at Law
Mountain Resort
Noah's World of Water
Novak's Auto Parts
Oregon River Experiences
Pacific Power and Light Company
Pape Bros., Inc.
Resource Management International
Rookstool and Alter, CPA
Scott-Free River Expeditions
Shotshell Ballistics Research
Sierra Whitewater Expeditions
Silver Cloud Farm
Smith's River Adventures
Southern Pacific Land Company
Stoel, Rivers, Boley, Fraser, and Wysel, Attorneys at Law
Sturdi-Craft, Inc.
Thomas Lumber Company
Tributary Whitewater Tours
Turtle River Rafting Company
Wet 'n Wild Wildwater Voyages
Weyerhaeuser Corporation
White Water Voyages
Whitewater Connection
Whitewater Excitement, Inc.
Whitewater Rapid Transit
Wild Water Adventures
Wild Waters West Limited
Wilderness Adventures

Organizations

American Rivers, Inc.
Ashland Chamber of Commerce
Association of Oregon Archaeologists
Audubon Society of Klamath Falls
Audubon Society of Portland
California Trout, Inc.
Ducks Unlimited/Shasta International
Four Runners Four Wheel Drive Club
Friends for Development of Renewable Resources
Friends of the Earth
Friends of the River
Kiwanis, Klamath Falls
Klamath Bassmasters
Klamath Bow Hunters
Klamath County Chamber of Commerce
Klamath County Historical Society
Klamath Country Flycasters
Klamath River Guides and Outfitters
Northwest Rafters' Association
Nature Society
Oregon Division, Izaak Walton League
Oregon Guides and Packers, Inc.
Oregon Hunters Association
Oregon Natural Desert Association
Oregon Natural Resources Council
Oregon Rivers Council
Oregon Wildlife Federation
Pacific Northwest Four Wheel Drive
Save Our Klamath Jobs
Save Our Klamath River
Sierra Club
Sierra Club Legal Defense Fund, Inc.
Southern Oregon Association of Kayakers
Wilderness Society
Yreka Associated Chamber of Commerce

Cities and Counties

City of Dorris, California
City of Haines, Oregon
City of Klamath Falls, Oregon
Coos-Curry Council of Governments

- Deschutes County Board of Commissioners
- Klamath County
  - County Judge
  - Planning Department
  - Public Works Department
  - Solid Waste Management
- Siskiyou County
  - Board of Supervisors
  - Department of Public Works
  - Planning Department
  - Rural Enterprise Commission

State Agencies

- State of California
  - Assistant Attorney General's Office
  - Department of Boating and Waterways
  - Department of Conservation
  - Department of Fish and Game
  - Department of Food and Agriculture
  - Department of Forestry and Fire Protection
  - Department of Parks and Recreation
  - Department of Transportation
  - Energy Commission
  - Resources Agency of California
  - State Lands Commission
  - State Clearinghouse
  - Water Resources Control Board

- State of Oregon
  - Department of Agriculture
  - Department of Energy
  - Department of Environmental Quality
  - Department of Fish and Wildlife
  - Department of Forestry, Office of State Forester
  - Department of Geology and Mineral Industries
  - Department of Justice
  - Department of Land Conservation and Development
  - Department of Transportation, Highway Division
  - Department of Transportation, Parks and Recreation Division
  - Department of Transportation, State Historic Preservation Office
  - Economic Development Department
  - Marine Board
  - Public Utility Commission
  - Water Resources Department

Federal Agencies

- Department of Agriculture
  - U.S. Forest Service
- Department of Commerce
  - National Marine Fisheries Service
- Department of Defense
  - Army Corps of Engineers
- Department of Energy
  - Bonneville Power Administration
- Department of the Interior
  - Bureau of Reclamation
  - Fish and Wildlife Service
  - National Park Service
  - Office of the Regional Solicitor
  - Regional Environmental Officer
- Environmental Protection Agency
  - Region 9, Water Management Division
- Federal Energy Regulatory Commission

Other

- California Indian Legal Services
- Klamath River Compact Commission
- Klamath Tribe
- Oregon Legal Services, Native American Program
- Pecos River Compact Commission
- Shasta Nation
- Umatilla Agency
- Warm Springs Agency

Approximately 200 additional individuals and organizations expressed interest in the upper Klamath River study and were sent copies of the River Study Report. Included in this group are members of the California and Oregon Legislatures, U.S. Congressional delegation, schools, and local and state news media.

In addition, this document will be available for public inspection at all BLM District Offices in Oregon, and the Redding and Ukiah BLM Offices in California. It will also be sent to the Klamath County Library in Klamath Falls, Oregon and the Shasta County Library in Redding, California.

Agencies and Organizations Contacted or Consulted

The River Study Team contacted, was contacted by, or consulted with the following agencies and organizations during the development of the Wild and Scenic River Study:

- Beak Consultants Incorporated
- California Department of Fish and Game
- California Department of Water Resources
- City of Klamath Falls, Oregon
- Envirosphere Company
- Federal Energy Regulatory Commission
- Klamath County Planning Office
- Klamath River Basin Compact Commission
- Klamath Tribe
- Lakeview District Multiple-Use Advisory Council
- Land and Water Associates
- National Park Service
- Northwest Power Planning Council
- Oregon Congressionals
- Oregon Department of Agriculture
- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Eagle Foundation
- Oregon Natural Heritage Foundation
- Oregon Rivers Council
- Oregon State Historic Preservation Office
- Oregon State Museum of Natural History
- Oregon State Parks and Recreation Division
- Oregon State University
- Oregon Water Resources Department
- Pacific Power and Light Company
- Resource Management International
- Siskiyou County Planning Office
- Southern Oregon State College
- Southern Pacific Land Compnay
- U.S. Bureau of Reclamation
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S.G.S. Water Resources Division
- Weyerhaeuser Corporation

Glossary

Allotment - An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federal managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Anadromous Fish - Fish that migrate as adults from the ocean into fresh water streams to reproduce young fish that migrate to the ocean to grow to maturity.

Animal Unit Months (AUMs) - The amount of forage necessary for the sustenance of one cow or its equivalent for one month.

Aquatic Habitat - Habitat that occurs in free water.

Archaeological Site - A cultural resource containing material remains of prehistoric and/or historic human activity.

Archaeological Survey (Class III - Intensive Field Inventory) - Continuous, intensive survey of an entire target area; aimed at locating and recording all cultural properties that have surface and exposed-profile indications.

Area of Critical Environmental Concern (ACEC) - An area within the public lands where special management attention is required (if such an area is developed or used, or where no development is permitted) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes or to protect life and safety from natural hazards (FLPMA Sec. 103(a)).

Artifact - An object that shows evidence of human manufacture, modification, or use. Commonly used to refer to prehistoric items, such as implements made of stone, bone, pottery, or other durable material.

Aspect - The direction a slope faces.

Big Game - Large mammals, some of which are hunted; e.g., Roosevelt elk, black-tailed deer, black bear; others, such as the endangered Columbian white tailed deer, are fully protected.

Biochemical Oxygen Demand - A measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria. This is a useful way to express stream pollution loads.

Broadcast Burning - A controlled fire which burns within well defined boundaries for reduction of fire hazard, as a silvicultural treatment, or for wildlife habitat improvement.

Candidate Species - Those plants and animals included in Federal Register "Notice of Review" that are being considered by the Fish and Wildlife Service (FWS) for listing as threatened or endangered.

Category 2 - Taxa for which the FWS has information to indicate that listing is possibly appropriate. Additional information is being collected.

Commercial Forest Land - Forest land that is now producing or is capable of producing at least 20 cubic feet of wood per acre per year of commercial tree species.

Cover - Vegetation used by wildlife for protection from predators, or to ameliorate conditions of weather, or in which to reproduce; fish cover may consist of deep water, undercut banks, submerged logs, or overhanging vegetation.

Critical Winter Range - A specific area within a general winter range that receives a higher degree of use and is of greater significance to migrating deer and elk during the winter months.

Cultural Resource - Any definite location of past human activity identifiable through field survey, historical documentation, or oral evidence; includes archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

Cultural Site - Any location that includes prehistoric and/or historic evidence of human use or that has important sociocultural value.

Diversity - A measure of the variety of species and habitat in an area that takes into account the relative abundance of each species or habitat.

Early Seral Stage - The time period in the life of a forest stand from disturbance (natural or man-caused) until canopy closure (when crown cover approaches 100%).

En Echelon - Parallel structural features that are offset like the edges of shingles on a roof.

Endangered Species - Any species published in the Federal Register as in danger of extinction through all or a significant portion of its range.

Environmental Impact Statement (EIS) - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major Federal action.

Eyrie(s) - Nest of a predatory bird built in a high, inaccessible location.

Flow Regime - Management or manipulation of water flows.

Forage - All browse and herbaceous foods that are available to grazing animals including wildlife and domestic livestock.

Habitat Diversity - The number of different types of habitat within a given area.

Historic Site - A cultural resource resulting from activities or events dating to the historic period (generally post AD 1850 in southeastern Oregon).

Late Seral Stage - The period in the life of a forest stand from attainment of an average stand DBH (diameter at breast height) of 12 inches until the culmination of mean annual increment.

Management Framework Plan (MFP) - Land use plan that established coordinated land use allocations for all resource and support activities for a specific land area within a BLM district. It also establishes objectives and constraints for each resource and support activity and provides data for consideration in program planning. (This process has been replaced by the Resource Management Planning process).

Midden - A deposit marking a former habitation site and containing such materials as discarded artifacts, bone and shell, food refuse, charcoal, ash, rock, human remains, structural remnants, and other cultural leavings.

Migration Corridor - A topographic feature and/or vegetative community that provides suitable habitat which animals follow during migration.

Montane Vegetation - Vegetation growing in or inhabiting a mountainous region.

National Register of Historic Places - A formal list, established by the National Historic Preservation Act of 1966, of the nation's cultural resources worthy of preservation. The Register lists archaeological, historic, and architectural properties (such as districts, sites, buildings, structures, and objects) nominated for the local, State, or National significance by State and/or Federal Agencies and approved by the National Register staff. The Register is maintained by the National Park Service.

Native American Heritage Sites - Places associated with cultural traditions of Native American groups and may or may not be associated with visible remains or deposits; i.e., traditional gathering locations, significant events in mythology, cemeteries, ethnohistorical habitation sites.

Nonforest Land - Land that has been developed for non-timber uses or land that is incapable of being 10% stocked with forest trees.

Nongame Wildlife - All wild terrestrial vertebrates not subject to sport hunting.

Non-point Source Pollution - Pollution caused by the introduction of materials from diffuse sources; e.g., sediments, nutrients, or natural or human alteration in the stream system.

Normal Faults - A fault in which the hanging wall has moved down, relative to the footwall.

Oregon & California (O&C) Lands - Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

Off-Road Vehicle (ORV) - Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

Plant Community - An association of plants of various species found growing together in different areas with similar site characteristics.

Point Source - Any confined and discrete conveyance from which pollutants are or may be discharged, such as pipes, ditches, channels, funnels, wells, or containers.

Potential ACEC - An area of land administered by BLM which, after review and recommendation by an interdisciplinary team, has been determined by the appropriate BLM District Manager to meet the following criteria:

(1) Relevance. There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.

(2) Importance. The above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.

Prehistoric - Refers to a period wherein Native American cultural activities took place which were not yet influenced by contact with historic non-native culture(s).

Prescribed Fire - A planned burning of live or dead vegetation under favorable conditions which would achieve desired management objectives.

Projectile Point - A sharp tip (usually stone) affixed to the business end of a spear, lance, dart, or arrow.

Public Domain Lands - Original holdings of the United States never granted or conveyed to other jurisdictions, or reacquired by exchange for other public domain lands.

Radiocarbon Date - A method for determining the age of organic material by measuring the extent to which the radioactive isotope Carbon-14 has decayed into stable nitrogen-14, comparing the observed C-14 fraction with the known half-life of 5568 ± 30 years.

Raptors - Bird species, such as eagle and hawks, which have adapted to seize prey.

Rearing Habitat - Areas in rivers or streams where juvenile salmon and trout find food and shelter to live and grow for a period of time.

Recovery Plan - A plan for the conservation and survival of an endangered species or a threatened species listed under the Endangered Species Act, for the purpose of improving the status of the species to the point where listing is no longer required.

Recreation Experience Opportunity - The opportunity for a person to realize predictable psychological and physiological outcomes from engaging in a specific recreation activity within a specific setting.

Recreation Opportunity Spectrum (ROS) - A continuum used to characterize recreation opportunities in terms of setting, activity, and experience opportunities. The spectrum contains six classes.

Recreational River - A river or section of a river that is readily accessible by road or railroad, that may have some development along its shorelines, and that may have undergone some impoundment of diversion in the past, which has been designated, as such, as part of the National Wild and Scenic Rivers System.

Riparian Zone - Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the watertable of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs, and wet meadows.

Riparian Vegetation - A highly valued vegetation community found near or around rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs, and wet meadows. This community type is a product of the vegetation complex and microclimate conditions combined with the presence and influence of perennial and/or intermittent water, associated high water tables, and soils which exhibit some wetness characteristics.

Scenic Quality - The relative worth of a landscape from a visual perception point of view.

Scenic River - A river or section of a river that is free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads, which has been designated as such, as part of the National Wild and Scenic Rivers System.

Seral Stages - The series of relatively transitory plant communities which develop during ecological succession from bare ground to the climax stage.

Slash - The branches, bark, tops, cull logs, and broken or uprooted trees left on the ground after logging has been completed.

Snag - Any standing dead, partially-dead or defective (cull) tree at least 10 inches in diameter at breast height and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

Special Recreation Management Areas (SRMA) - Areas where congressionally recognized recreation values exist or where significant pubic recreation issues or management concerns occur. Special or more intensive types of management are typically needed.

State Listed Species - Plant or animal species listed by the State of Oregon as threatened, endangered, or sensitive pursuant to ORS 496.004, ORS 498.026, or ORS 564.040.

Stream Class - A system of stream classification established in the Oregon Forest Practices Act. Class 1 streams are those which are significant for domestic use, angling, water dependent recreation and spawning, rearing or migration of anadromous or game fish. Class 2 streams are: (1) those which have a significant summertime cooling influence on downstream Class 1 streams; or (2) any stream which is not Class 1.

Thermal Cover - Cover used by animals to ameliorate effects of weather. For elk, a stand of conifer trees which are 40 feet or more tall with an average crown closure of 70% or more. For deer, cover may include saplings, shrubs or trees at least 5 feet tall with 75% crown closure.

Threatened Species - A plant or animal species listed in the Federal Register that the Secretary of the Interior has determined is likely to become endangered within the foreseeable future throughout all or most of its range.

Visual Resources - The visible physical features on a landscape; e.g., land, water, vegetation, animals, structures, and other features.

Visual Resource Management (VRM) - The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Resource Management Classes - Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape. These objectives are described in the BLM Handbook H-8410-1.

Water Quality - The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

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Appendices

Appendix A
Recreation Opportunity Spectrum (ROS) Classes

The following chart describes each of the six ROS classes in terms of: (1) experience opportunities; (2) setting opportunities, and (3) activity opportunities. These descriptors provide a general overview of the opportunities included in each class. These overview statements do not describe each class in detail, but rather provide a point of departure from which the planner or manager can develop more precise prescriptions for each class based on specific situations encountered in field operations. The listing of activity opportunities is provided for illustrative purposes. It is not an all-inclusive list of activity opportunities on the public lands.

The Recreation Opportunity Spectrum Class Descriptions

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Primitive	Opportunity for isolation from the sights and sounds of people, to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.	Area is characterized by essentially unmodified natural environment of fairly large size. Concentration of users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of induced restrictions and controls. Only facilities essential for resource protection are used. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.	Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, waterfowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (nonmotorized craft).
Semi-Primitive Nonmotorized	Some opportunity for isolation from the sights and sounds of people, but not as important as for primitive opportunities. Opportunity to have high degree of inter-	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often	Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, water-

The Recreation Opportunity Spectrum Class Descriptions (continued)

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Semi-Primitive Nonmotorized (continued)	action with the natural environment, to have moderate challenge and risk, and to use outdoor skills.	evidence of other area users. On-site controls and restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not permitted.	fowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (non-motorized craft).
Semi-Primitive Motorized	Some opportunity for isolation from the sights and sounds of people, but not as important as for primitive opportunities. Opportunity to have high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Explicit opportunity to use motorized equipment while in the area.	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. On-site controls and restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is permitted.	Same as the above, plus the following: ORV Use (4-WD, Dune Buggy, Dirt Bike, Snowmobile), Power Boating.
Roaded Natural	About equal opportunities for affiliation with other user groups and for isolation from sights and sounds of man. Opportunity	Area is characterized by a generally natural environment with moderate evidence of the sights and sounds	All activities listed previously, plus the following: picnicking, rock collecting, wood gathering, auto

The Recreation Opportunity Spectrum (ROS) Classes (continued)

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Roaded Natural (continued)	to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important except in specific challenging activities. Practice of outdoor skills may be important. Opportunities for both motorized and non-motorized recreation are present.	of people. Resource modification and utilization practices are evident, but harmonize with the natural environment. Concentration of users is low to moderate with facilities sometimes provided for group activity. On-site controls and restrictions offer a sense of security. Rustic facilities are provided for user convenience as well as for safety and resource protection. Conventional motorized use is provided for in construction standards and design of facilities.	touring, downhill skiing, snowplay, ice skating, water-skiing and other water sports, hang gliding, interpretive use, rustic resorts and organized camps.
Rural	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are generally more important than the natural setting. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant, except in those activities involving challenge and risk.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are obvious. Sights and sounds of people are readily evident, and the concentration of users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for specific activities. Developed sites, roads and trails, are designed	All activities listed previously, plus the following: competitive games, spectator sports, bicycling, jogging, outdoor concerts, and modern resorts.

The Recreation Opportunity Spectrum (ROS) Classes (continued)

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Rural (continued)		for moderate to high use. Moderate densities are provided far away from developed sites. Facilities for intensive motorized use are available.	
Modern Urban	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. Experiencing the natural environment and the use of outdoor skills are largely unimportant.	Area is characterized by a highly modified environment, although the background may have natural elements. Vegetation is often exotic and manicured. Soil may be protected by surfacing. Sights and sounds of people, on-site, predominate. Large numbers of users can be expected. Modern facilities are provided for the use and convenience of large numbers of people. Controls and restrictions are obvious and numerous. Facilities for high intensity motor use and parking are present with forms of mass transit often available.	All activities listed previously.

Appendix B
Species List For Birds, Mammals, and Herptiles[1]

Birds Known To Occur Within The Study Area

Common Name	Scientific Name
RAPTORS	
Turkey Vulture	*Carthartes aura*
Sharp-shinned Hawk	*Accipter striatus*
Cooper's Hawk	*Accipter cooperii*
Northern Goshawk	*Accipter gentilis*
Osprey	*Pandion haliaetus*
Bald Eagle	*Haliaetus leucocephalus*
Golden Eagle	*Aquila chrysaetos*
Red-tailed Hawk	*Bueto jamaicensis*
American Kestrel	*Falco sparverius*
Prairie Falcon	*Falco mexicanus*
Peregrine Falcon	*Falco peregrinus*
Long-eared Owl	*Asio otus*
Great Horned Owl	*Bubo virginianus*
Western Screech-Owl	*Otus kennicottii*
Flammulated Owl	*Otus flammeolus*
Northern Pygmy Owl	*Glaucidium gnoma*
WATERFOWL	
Tundra Swan	*Cygnus columbianus*
Canada Goose	*Branta canadensis*
Common Merganser	*Mergus merganser*
Barrow's Goldeneye	*Bucephala islandica*
Wood Duck	*Aix sponsa*
Green-wing Teal	*Anas crecca*
Cinnamon Teal	*Anas cyanoptera*
Mallard	*Anas platyrhynchos*
UPLAND GAMEBIRDS	
Blue Grouse	*Dendragapus obscurus*
California Quail	*Callipepla californica*
Mountain Quail	*Oreortyx pictus*
Chukar	*Alectoris chukar*
Red-legged Partridge	*Alectoris rufa*
Wild Turkey	*Meleagris gallopavo*
Band-tailed Pigeon	*Columba fasciata*
Mourning Dove	*Zenaida macroura*

Common Name	Scientific Name
WATER ASSOCIATED BIRDS	
Double-crested Cormorant	*Phalacrocorax auritus*
Great Blue Heron	*Ardea herodias*
Spotted Sandpiper	*Actitus macularia*
Killdeer	*Charadrius vociferus*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Forster's Tern	*Sterna forsteri*
Belted Kingfisher	*Ceryle alcyon*
American Dipper	*Cinclus mexicanus*
NON-GAME BIRDS	
Vaux's Swift	*Chaetura vauxi*
Common Nighthawk	*Chordeiles minor*
White-throated Swift	*Aeronautes saxatalis*
Northern Flicker	*Colaptes auratus*
Acorn Woodpecker	*Melanerpes formacivorus*
Lewis' Woodpecker	*Melanerpes lewis*
Downy Woodpecker	*Picoides pubescens*
Hairy Woodpecker	*Picoides villosus*
Pileated Woodpecker	*Dryocopus pileatus*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Western Flycatcher	*Empidonax difficilis*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Say's Phoebe	*Sayornis saya*
Olive-sided Flycatcher	*Contopus borealis*
Empidonax Sp.	*Empidonax* sp.
Violet-green Swallow	*Tachycineta thalassina*
Tree Swallow	*Tachycineta bicolor*
Bank Swallow	*Riparia riparia*
Cliff Swallow	*Hirundo pyrrhonota*
Scrub Jay	*Aphelocoma coerulescens*
Stellar's Jay	*Cyanocitta stelleri*
Common Raven	*Corvus corax*
American Crow	*Corvus brachyrhynchos*
Wrentit	*Chamaea fasciata*
Black-capped Chickadee	*Parus atricapillus*
Mountain Chickadee	*Parus gambeli*
Brown Creeper	*Certhia americana*
Red-breasted Nuthatch	*Sitta canadensis*
House Wren	*Troglodytes aedon*
Canyon Wren	*Catherpes mexicanus*
Bewick's Wren	*Thyromanes beweckii*
Kinglet Sp.	*Regulus* sp.
Mountain Bluebird	*Sialia currucoides*
Western Bluebird	*Sialia mexicana*
Townsend's Solitaire	*Myadestes townsendi*
Thrush Sp.	*Catharus* sp.
American Robin	*Turdus migratorius*
European Starling	*Sturnis vulgaris*
Warbling Vireo	*Vireo gilvus*
Orange-crowned Warbler	*Vermivora celata*

Common Name	**Scientific Name**
NON-GAME BIRDS (continued)	
Yellow-rumped Warbler	*Dendroica coronata*
Yellow Warbler	*Dendroica petechia*
MacGillivray's Warbler	*Oporornis tolmiei*
Wilson's Warbler	*Wilsonia pusilla*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Lazuli Bunting	*Passerina amoena*
Rufous-sided Towhee	*Pipilo erythrophthalmus*
Song Sparrow	*Melospiza melodia*
Chipping Sparrow	*Spizella passerina*
Brewer's Sparrow	*Spizella breweri*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
Red-winged Blackbird	*Agelaius phoeniceus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Northern Oriole	*Icterus galbula*
Western Tanager	*Piranga ludoviciana*
Purple Finch	*Carpodacus purpureus*

Mammals Known To Occur Within The Study Area

OTHER MAMMALS	
Porcupine	*Erithizon dorsatum*
Striped Skunk	*Mephitis mephitis*
Western Spotted Skunk	*Spilogale gracilis*
Nuttall's Cottontail	*Sylvilagus audubonii*
Western Gray Squirrel	*Sciurus griseus*
California Ground Squirrel	*Spermophilus beechyii*
Yellow Pine Chipmunk	*Eutamias amoenus*
Bushy-tailed Woodrat	*Neotoma cinerea*
Deer Mouse	*Peromyscus maniculatus*
Trowbridge's Shrew	*Sorex trowbridgii*
Townsend's Big-eared Bat	*Plecotus townsendii*
Little Brown Bat	*Myotis lucifugus*
California Myotis	*Myotis californicus*
Yuma Myotis	*Myotis yumanensis*
Hoary Bat	*Lasiurus cinereus*
FURBEARERS	
Bobcat	*Felis rufus*
Coyote	*Canis latrans*
Gray Fox	*Urocyon cinereoargenteus*
Raccoon	*Procyon lotor*
Ringtail	*Bassariscus astutus*
River Otter	*Lutra canadensis*
Beaver	*Castor canadensis*
Muskrat	*Ondatra zibethicus*
Mink	*Mustela vison*
Fisher	*Martes pennanti*
Long-tailed Weasel	*Mustela frenata*
Short-tailed Weasel	*Mustela erminea*

Common Name	Scientific Name
BIG GAME	
Roosevelt Elk	*Cervus elaphus roosevelti*
Black-tailed Deer	*Odocoileus hemionus*
Black Bear	*Ursus americanus*
Cougar	*Felis concolor*

Herptiles Known To Occur Within The Study Area

REPTILES	
Western Rattlesnake	*Crotalus viridus*
Ringneck Snake	*Diadophis punctatus*
Common Garter Snake	*Thamnophis sirtalis*
Western Terrestrial Garter Snake	*Thamnophis elegans*
Gopher Snake	*Pituophis melanoleucus*
Racer	*Coluber constrictor*
California Mountain Kingsnake	*Lampropeltis zonata*
Western Fence Lizard	*Sceloporus occidentalis*
Alligator Lizard	*Gerrhonotus* sp.
Sagebrush Lizard	*Sceloporus graciosus*
Western Skink	*Eumeces skiltonianus*
Western Pond Turtle	*Clemmys marmorata*
AMPHIBIANS	
Western Toad	*Bufo boreas*
Pacific Tree Frog	*Hyla regilla*
Long-toed Salamander	*Ambystoma macrodactylum*

---

[1] Sources: City of Klamath Falls 1986; Oregon Department of Fish and Wildlife, Klamath District Office; St. John 1987; BLM, Klamath Falls Resource Area, field observations.

Appendix C
Species List for Fish[1]

Fish Species Found In The Klamath River Within The Study Area

Common Name	Scientific Name
Brown Trout	*Salmo trutta*
Rainbow Trout	*Oncorhynchus mykiss*
Lost River Sucker	*Deltistes luxatus*
Shortnose Sucker	*Chasmistes brevirostris*
Klamath Largescale Sucker	*Catostomus snyderi*
Klamath Smallscale Sucker	*Catostomus rimiculus*
Blue Chub	*Gila coerulea*
Tui Chub	*Gila bicolor*
Marbled Sculpin	*Cottus klamathensis*
Pacific Lamprey	*Lampetra tridentatas*
Yellow Perch	*Perca flavescens*
Pumpkinseed	*Lepumus gibbosus*
Brown Bullhead	*Ictalurus nebulosus*
Fathead Minnow	*Pimephales promelas*
Klamath Speckled Dace	*Rhinichthys osculus*

---

[1] Sources: City of Klamath Falls 1986; Oregon Department of Fish and Wildlife, Klamath District Office; California Department of Fish and Game, Yreka Field Office.

Appendix D
Prehistoric Sites in the Upper Klamath River Study Area

Site Number	Site Type	Comments	Ownership
35 KL 16	Pit House Village	23 housepits	Private
35 KL 18	Pit House Village	41 housepits	Private
35 KL 20	Pit House Village	13 housepits	Private
35 KL 22	Pit House Village	7 housepits, burial	BLM
35 KL 23	Pit House Village	4 housepits	Private
35 KL 25	Pit House Village	10 housepits	Private
35 KL 26	Pit House Village	10 housepits	Private
35 KL 550	Pit House Village	3 housepits	BLM
35 KL 576	Pit House Village	4 housepits	BLM
35 KL 628	Pit House Village	2 housepits	BLM
35 KL 629	Pit House Village	3 housepits, burial	BLM
35 KL 631	Pit House Village	8 housepits	Private
35 KL 633	Pit House Village	8 housepits	BLM
CA SIS 1198	Pit House Village	10 housepits, Ghost Dance	BLM
BLM 030-060	Pit House Village	4 housepits	BLM
35 KL 785	Stone Ring	1 stone ring	BLM
35 KL 797	Stone Rings	5 stone rings	BLM
CA SIS 16	Rock Shelter	midden deposit	Private
35 KL 19	Lithic Scatter		Private
35 KL 551	Lithic Scatter		BLM
35 KL 552	Lithic Scatter		Private
35 KL 554	Lithic Scatter		Private
35 KL 555	Lithic Scatter		BLM
35 KL 556	Lithic Scatter		BLM
35 KL 557	Lithic Scatter		Private
35 KL 558	Lithic Scatter	sparse flakes	BLM
35 KL 566	Lithic Scatter		Private
35 KL 578	Lithic Scatter		Private
35 KL 632	Lithic Scatter	very diffuse	BLM
35 KL 634	Lithic Scatter	sparse flakes	BLM
35 KL 635	Lithic Scatter		BLM
35 KL 783	Lithic Scatter		BLM
35 KL 784	Lithic Scatter	sparse flakes	Private
35 KL 786	Lithic Scatter		BLM
35 KL 787	Lithic Scatter		Private
35 KL 788	Lithic Scatter		Private
35 KL 789	Lithic Scatter		BLM
35 KL 790	Lithic Scatter		Private
BLM 030-061	Midden		Private
35 KL 21	Burials and midden		Private
35 KL 567	Burial site	27 rock cairns	Private
Site 44	Burial site	33 rock cairns	Private
35 KL 630	Quarry	chert outcrop	BLM

Appendix E
Species List for Plants[1]

Some Common Plant Species Occurring In The Study Area

Common Name	Scientific Name
TREES	
Sugar Pine	*Pinus lambertiana*
Ponderosa Pine	*Pinus ponderosa*
Douglas-fir	*Pseudotsuga menziesii*
White Fir	*Abies concolor*
Incense Cedar	*Libocedrus decurrens*
Western Juniper	*Juniperus occidentalis*
Golden Chinquapin	*Castanopsis chrysophylla*
Oregon White Oak	*Quercus garryana*
California Black Oak	*Quercus kelloggii*
Birch	*Betula* sp.
Oregon Ash	*Fraxinus latifolia*
Quaking Aspen	*Populus tremuloides*
White Alder	*Alnus rhombifolia*
SHRUBS	
Mountain Mahogany	*Cercocarpus* sp.
Manzanita	*Arctostaphylos* sp.
Deerbrush	*Ceanothus integerrimus*
Wedgeleaf Ceanothus	*Ceanothus cuneatus*
Bitterbrush	*Purshia tridentata*
Rabbitbrush	*Chrysothamnus* sp.
Western Serviceberry	*Amelanchier florida*
Gooseberry	*Ribes* sp.
Snowberry	*Symphoricarpos* sp.
Oregon Grape	*Berberis aquifolium*
Poison Oak	*Rhus diversiloba*
Blue Elderberry	*Sambucus cerulea*
Lewis Mockorange	*Philadelphus lewisii*
Willow	*Salix* sp.
Douglas Spiraea	*Spiraea douglasii*
Western Wild Grape	*Vitis california*
FORBS	
Buckwheat	*Eriogonum* sp.
Western Buttercup	*Ranunculus occidentalis*
Pussytoes	*Antennaria* sp.
Nuttall's Gayophytum	*Gayophytum nuttallii*
Puget Balsamroot	*Balsamorhiza deltoidea*
Wild Strawberry	*Fragaria* sp.
Lupine	*Lupinus* sp.
Mountain Dandelion	*Agnoseris* sp.
Yarrow	*Achillea millefolium*
Solomonplume	*Smilacina* sp.
Large-flowered Collomia	*Collomia grandiflora*

Some Common Plant Species Occurring In The Study Area (continued)

Common Name	Scientific Name
FORBS (continued)	
Wooly Sunflower	*Eriophyllum lanatum*
Tarweed	*Madia* sp.
California Poppy	*Eschscholtzia california*
Least Hopclover	*Trifolium dubium*
Tidy-tips	*Layia glandulosa*
Watercress	*Rorippa nasturtium-aquaticum*
Monkeyflower	*Mimulus* sp.
Speedwell	*Veronica* sp.
Boreal Bog-orchid	*Habenaria dilatata*
Cat-tail	*Typha latifolia*
GRASSES	
Two-flowered Fescue	*Festuca reflexa*
Western Fescue	*Festuca occidentalis*
Idaho Fescue	*Festuca idahoensis*
Blue Wildrye	*Elymus glaucus*
Medusahead Wildrye	*Elymus caput-medusae*
Cheatgrass	*Bromus tectorum*
Hairy Brome	*Bromus commutatus*
Soft Cheat	*Bromus mollis*
Needlegrass	*Stipa* sp.
Pine Bluegrass	*Poa scabrella*
Bulbous Bluegrass	*Poa bulbosa*
Bluebunch Wheatgrass	*Agropyron spicatum*
Bottlebrush Squirreltail	*Sitanion hystrix*
Foxtail Barley	*Hordeum* sp.
Few-flowered Wild Oatgrass	*Danthonia unispicata*
Reed Canary Grass	*Phalaris arundinacea*
Rush	*Juncus* sp.
Sedge	*Carex* sp.

T&E Plant Species Potentially Found In Study Area

Pygmy Monkey Flower	*Mimulus pygmaeus*
Greene's Mariposa Lily	*Calochortus greenei*
Short-podded Thelypody	*Thelypodium brachycarpum*

---

[1] Source: City of Klamath Falls 1986.

Appendix F
Statewide Comprehensive Outdoor Recreation Plan
Region 9

The region used in this document for a comparison of outstandingly remarkable values is the Southwestern Region 9 from the Statewide Comprehensive Outdoor Recreation Plan, described below and shown on Map 1. Siskiyou County in California (not shown) is also included in the region for purposes of comparing values in segment 3 of the upper Klamath River.

Southwestern—Region 9

Counties: Jackson, Josephine, Klamath and most of Douglas County.

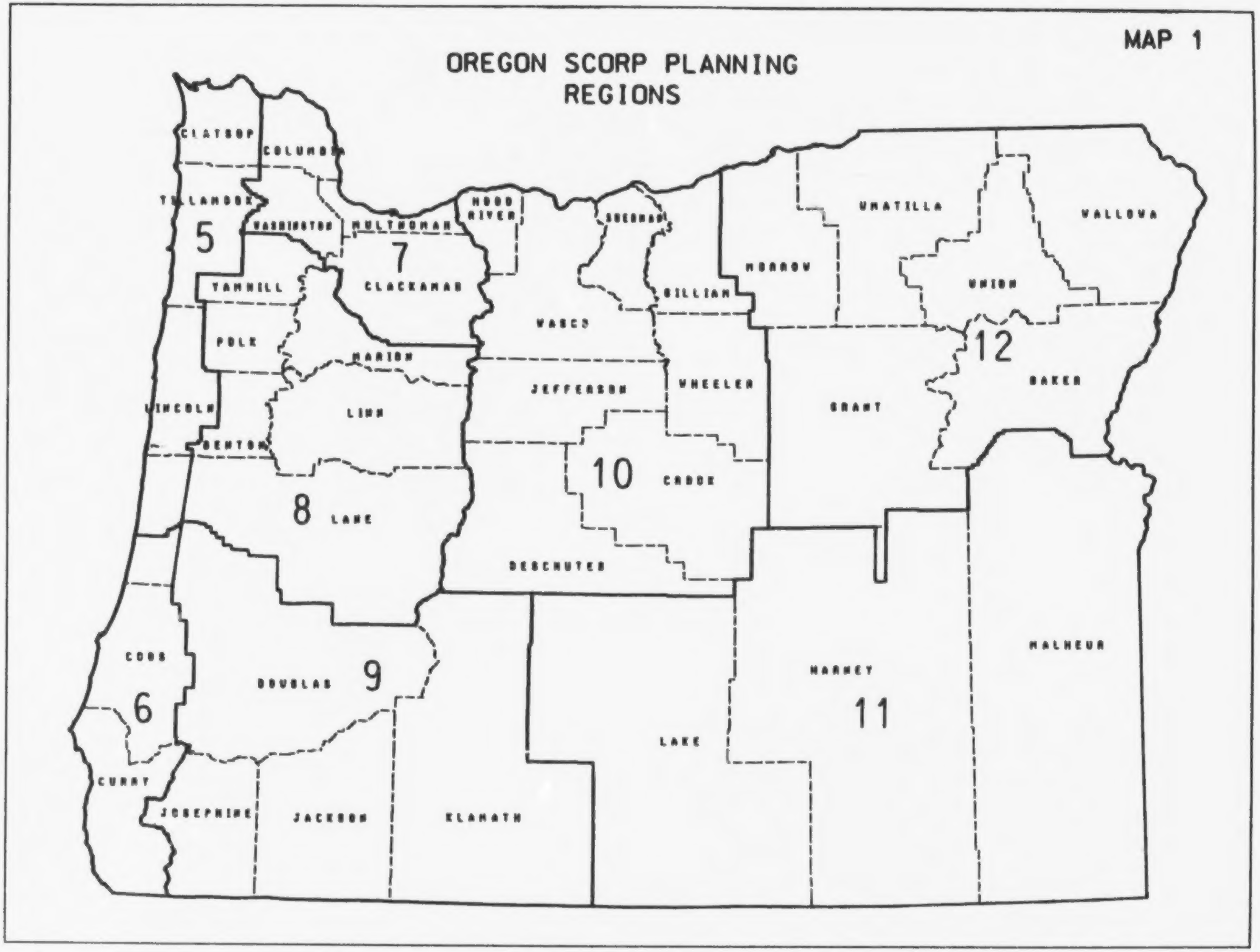
This region is very mountainous. One of the state's most outstanding natural features, Crater Lake, is located in the southern Cascades in this area. The lake lies 2,000 feet below the rim of the surrounding caldera which was created by the prehistoric explosion of the volcano, Mt. Mazama. Southwest of the Cascade Range are the Siskiyou Mountains. These peaks, some more than 8,000 feet, are much higher than those in the Coast Range (which form the western boundary of this region).

The Umpqua River cuts east/west across the northern area of this region. The Rogue River and its tributaries, primarily the Applegate and Illinois Rivers, drain the Siskiyou watershed and flow through the mountains in deep gorges. The larger lowlands of this area are the alluvial basins around Medford and Grants Pass and the wetlands of the Klamath Lake area.

Southwestern Oregon is somewhat more sheltered from the influences of the ocean than the Willamette Valley to the north. The climate tends to be drier, with colder temperatures in the winter and an average daytime temperature of 85°F in the summer. The higher elevations of the area receive most of its moisture as snow in the winter which is important to maintain adequate water for the major rivers.

The mixed forest in this region includes Douglas fir, white fir, sugar pine, incense cedar, canyon live oak, tan oak, madrone and manzanita

Source: Oregon's Statewide Comprehensive Outdoor Recreation Plan, December 1988.



MAP 1

OREGON SCORP PLANNING REGIONS

CLATSOP
COLUMBIA
TILLAMOOK
WASHINGTON
MULTNOMAH
HOOD RIVER
SHERMAN
5
7
YAMHILL
CLACKAMAS
WASCO
GILLIAM
MORROW
UMATILLA
UNION
WALLOWA
POLK
MARION
LINCOLN
LINN
BENTON
JEFFERSON
WHEELER
GRANT
12
BAKER
10
CROOK
8
LANE
DESCHUTES
COOS
DOUGLAS
9
6
CURRY
JOSEPHINE
JACKSON
KLAMATH
LAKE
HARNEY
11
MALHEUR

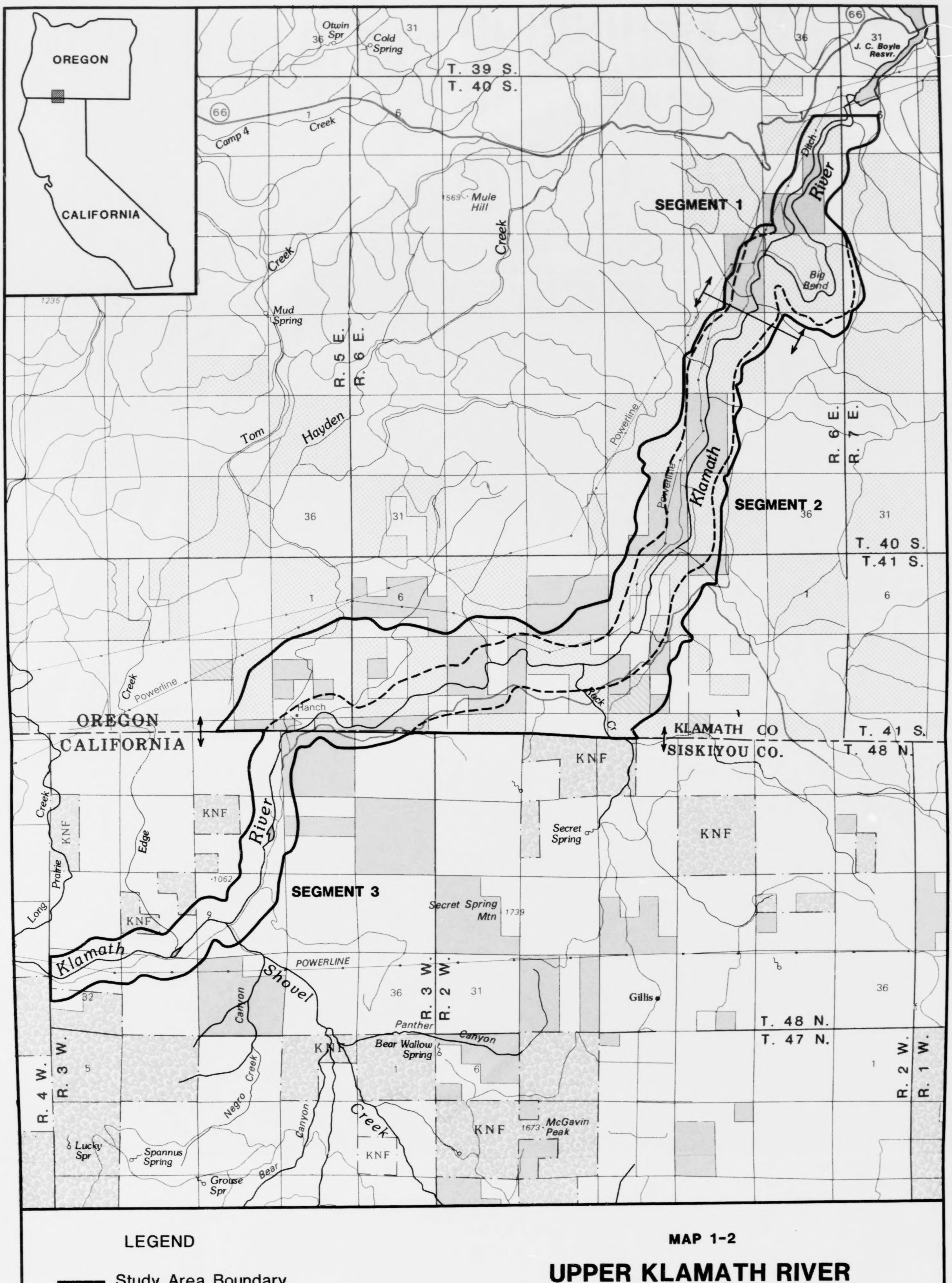
☆ U.S. GOVERNMENT PRINTING OFFICE: 1989—791-061/00,513 REGION NO. 10

UNITED STATES
DEPARTMENT IF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Klamath Falls Resource Area
2795 Anderson Ave., Bldg. 25
Klamath Falls, Oregon 97603

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

Forwarding and Return Postage
Guaranteed,
Address Correction Requested

FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. Department of the Interior
Permit No G-65


OREGON
CALIFORNIA
Otwin Spr
Cold Spring
J. C. Boyle Resvr.
66
T. 39 S.
T. 40 S.
Camp 4
Creek
Ditch
River
SEGMENT 1
Mule Hill
1569
Creek
Tom
Creek
Big Bend
Mud Spring
R. 5 E.
R. 6 E.
Tom
Hayden
Powerline
Klamath
SEGMENT 2
R. 6 E.
R. 7 E.
T. 40 S.
T. 41 S.
Creek
Powerline
Ranch
Rock Cr.
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
Long Prairie Creek
Edge
River
1062
SEGMENT 3
Secret Spring Mtn
1739
Klamath
POWERLINE
Shovel
Canyon
R. 3 W.
R. 2 W.
Gillis
T. 48 N.
T. 47 N.
Panther Canyon
Bear Wallow Spring
R. 4 W.
R. 3 W.
Negro Creek
Canyon
Creek
McGavin Peak
1673
Lucky Spr
Spannus Spring
Grouse Spr
Bear
R. 2 W.
R. 1 W.

LEGEND

—— Study Area Boundary

- - - - Minimum Study Area Boundary (1/4 Mile)

N

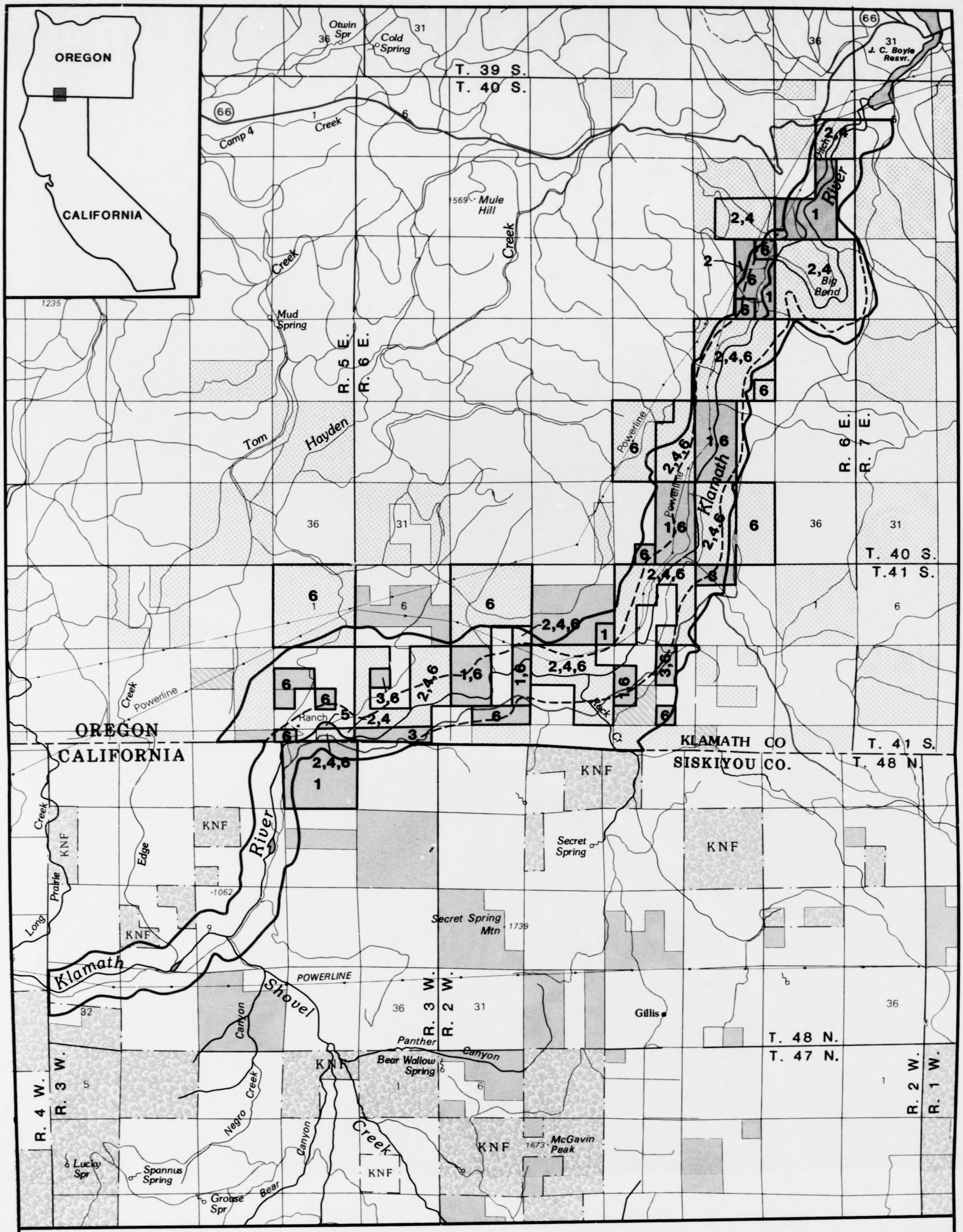
MAP 1-2

UPPER KLAMATH RIVER

WILD AND SCENIC RIVER STUDY AREA

1989

1 0 1 2 3 Miles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CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
66
Camp 4
Creek
J. C. Boyle Resvr.
Ditch
River
Big Bend
Mule Hill
1569
Creek
Mud Spring
1235
R. 5 E.
R. 6 E.
Tom
Hayden
Powerline
Klamath
R. 6 E.
R. 7 E.
T. 40 S.
T. 41 S.
Ranch
Rock Cr.
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
River
Edge
Long Prairie Creek
-1062
Secret Spring Mtn
1739
Klamath
POWERLINE
Shovel
Canyon
R. 3 W.
R. 2 W.
Panther Canyon
Bear Wallow Spring
Gillis
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
Negro Creek
Canyon
Creek
Bear
Lucky Spr
Spannus Spring
Grouse Spr
McGavin Peak
1673
2,4
1
2,4,6
1,6
2,4,6
3,6
5
3
6

LEGEND

- 1 Power Site Reserve No. 258
- 2 Power Site Reserve No. 582
- 3 Power Site Reserve No. 579
- 4 Water Power Design No. 3
- 5 Power Site Classification No. 2
- 6 Power Project No. 10199 (Salt Caves)

N

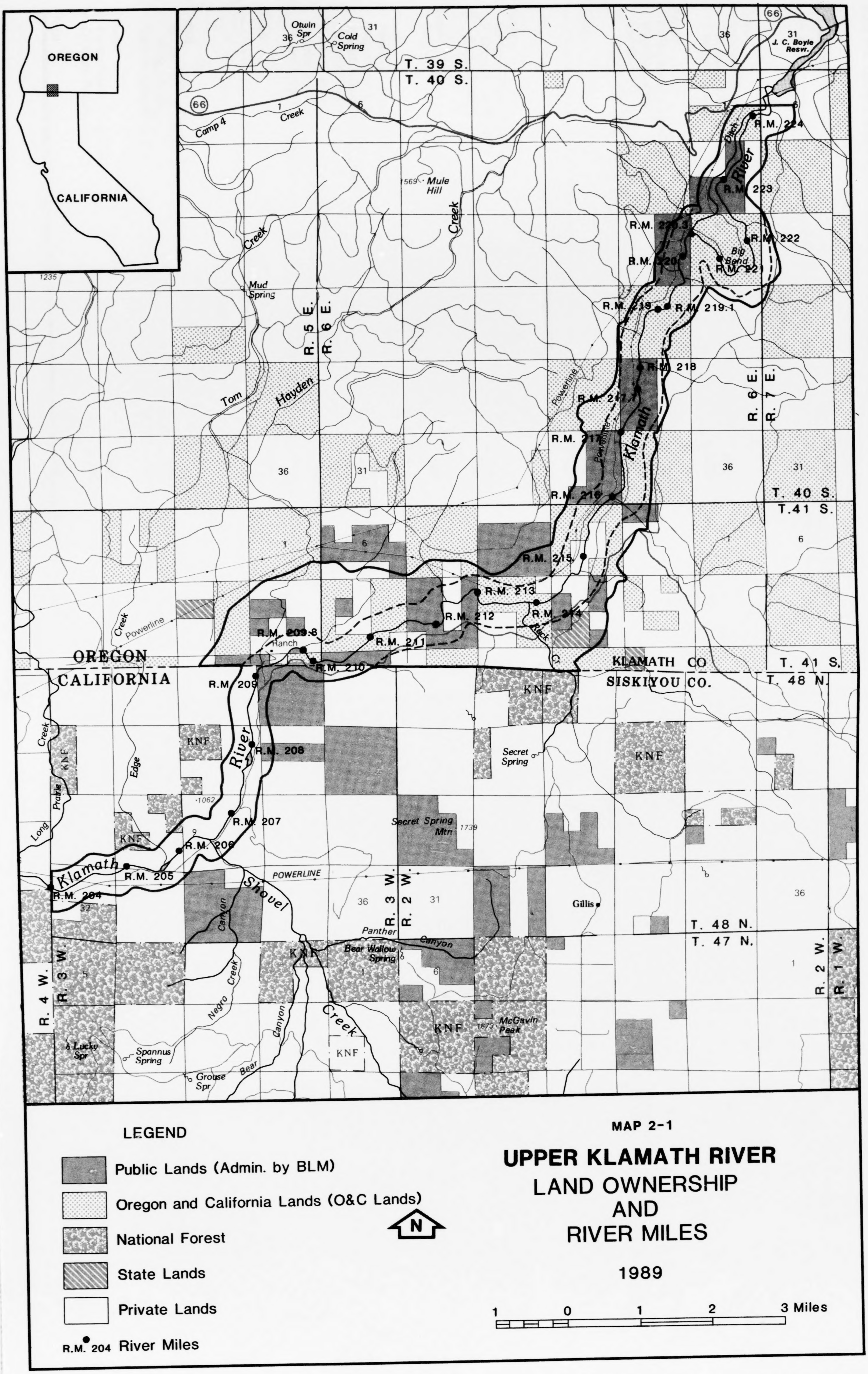
MAP 1-3

UPPER KLAMATH RIVER

POWER WITHDRAWALS

1989

1 0 1 2 3 Miles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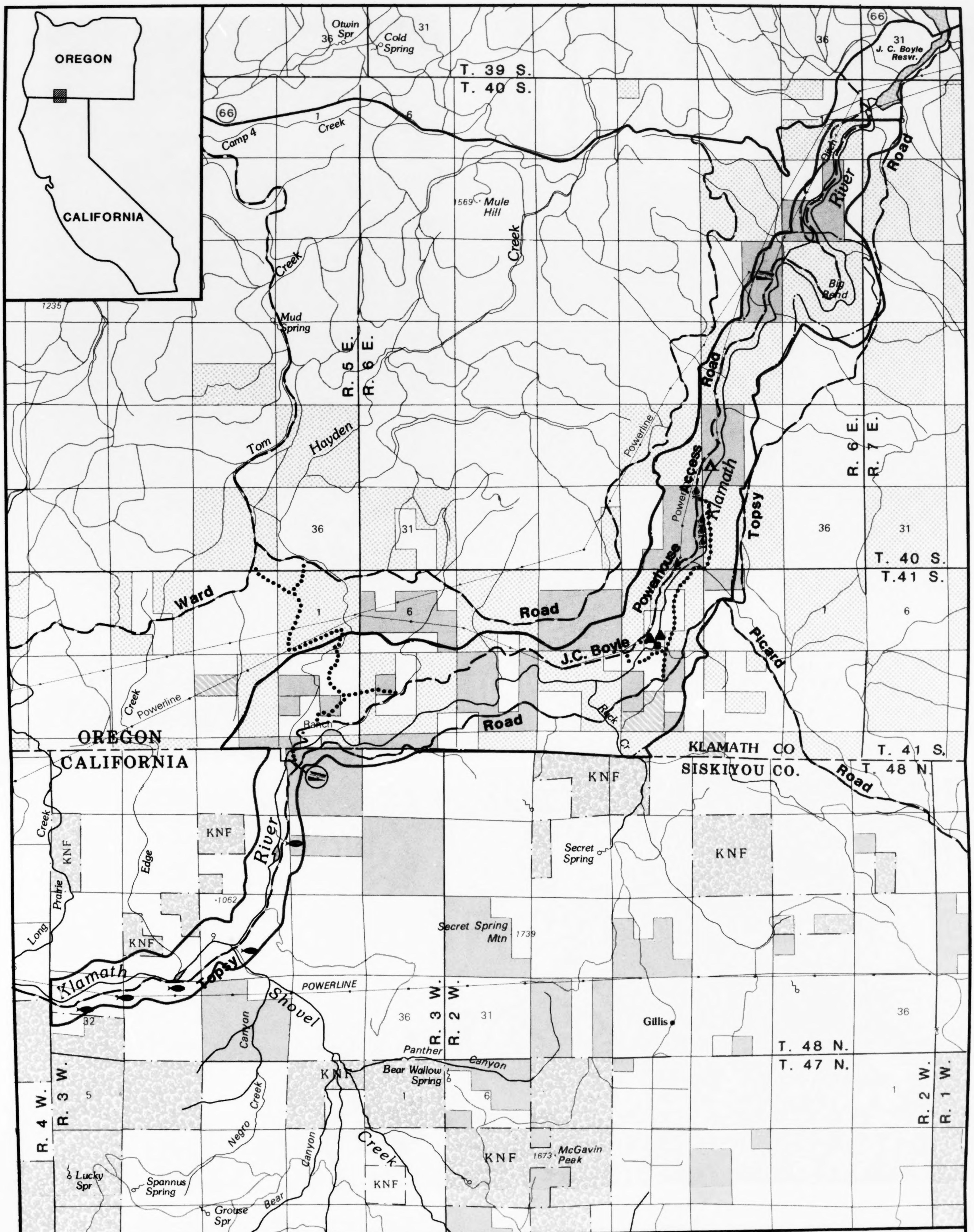
CALIFORNIA
Otwin Spr
Cold Spring
66
J. C. Boyle Resvr.
T. 39 S.
T. 40 S.
Camp 4 Creek
Mule Hill
1569
Creek
Tom Creek
Hayden
Mud Spring
1235
R. 5 E.
R. 6 E.
R. 7 E.
Ditch
River
Klamath
Powerline
Big Bend
R.M. 224
R.M. 223
R.M. 222
R.M. 221
R.M. 220.3
R.M. 220
R.M. 219
R.M. 219.1
R.M. 218
R.M. 217.1
R.M. 217
R.M. 216
R.M. 215
R.M. 214
R.M. 213
R.M. 212
R.M. 211
R.M. 210
R.M. 209.8
R.M. 209
R.M. 208
R.M. 207
R.M. 206
R.M. 205
R.M. 204
Ranch
Rock Cr.
T. 40 S.
T. 41 S.
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
Secret Spring Mtn
1739
1062
Long Prairie Creek
Edge Creek
Shovel Creek
POWERLINE
R. 3 W.
R. 2 W.
R. 4 W.
R. 1 W.
Gillis
Panther Canyon
Bear Wallow Spring
Negro Creek
Canyon
Bear Canyon
McGavin Peak
1673
Lucky Spr
Spannus Spring
Grouse Spr
T. 48 N.
T. 47 N.
36
31
1
6
5
32
LEGEND
Public Lands (Admin. by BLM)
Oregon and California Lands (O&C Lands)
National Forest
State Lands
Private Lands
R.M. 204 River Miles
N
1
0
1
2
3 Miles

MAP 2-1

UPPER KLAMATH RIVER
LAND OWNERSHIP
AND
RIVER MILES

1989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CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
66
J. C. Boyle Resvr.
Camp 4
Creek
1569 Mule Hill
Creek
Mud Spring
Tom
Hayden
R. 5 E.
R. 6 E.
River
Road
Big Bend
Road
Powerline
Access
Powerhouse
Klamath
Topsy
R. 6 E.
R. 7 E.
T. 40 S.
T.41 S.
Ward
Road
J.C. Boyle
Road
Picard
Creek
Powerline
Ranch
Rock Cr.
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
Road
KNF
Secret Spring
KNF
Creek
KNF
Edge
River
Prairie
Long
1062
KNF
Secret Spring Mtn 1739
Klamath
Topsy
POWERLINE
Shovel
Canyon
R. 3 W.
R. 2 W.
Panther
Canyon
Gillis
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
Negro Creek
KNF
Bear Wallow Spring
Creek
Canyon
Bear
KNF
1673 McGavin Peak
KNF
Lucky Spr
Spannus Spring
Grouse Spr
R. 2 W.
R. 1 W.

LEGEND

—— Highway 66

– – – Primary Access Roads

•••••••• Secondary Access Roads

BLM Raft Launch Area

△ BLM Semi-Primitive Campsites

▲ Primitive Campsite (Private Property)

Primitive Campsites with Fire Rings

■ Frain Ranch (Recreational Use Area)

BLM Raft Take-Out Area

Fishing Access Points

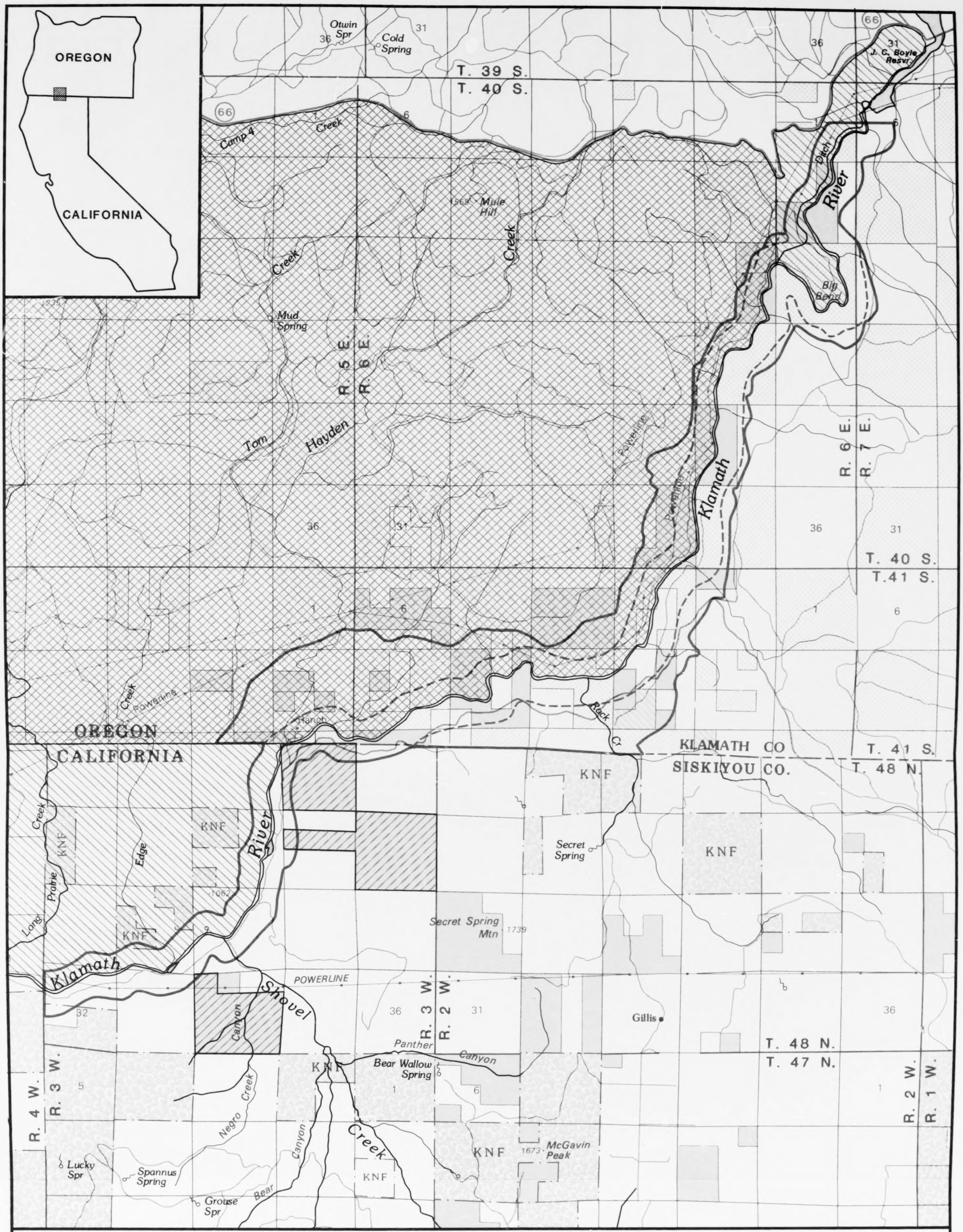
—·— SRMA Boundary

MAP 2-3

UPPER KLAMATH RIVER
ACCESS ROADS AND RECREATION SITES

1989

1 0 1 2 3 Miles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CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
66
Camp 4
Creek
J. C. Boyle Resvr.
Ditch
River
Mule Hill
1569
Creek
Creek
Mud Spring
R. 5 E.
R. 6 E.
Big Bend
Tom
Hayden
Powerline
Powerline
Klamath
R. 6 E.
R. 7 E.
36
31
T. 40 S.
T. 41 S.
1
6
Creek
Powerline
Ranch
Rock Cr.
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Creek
KNF
Edge
River
Prairie
Long
Secret Spring
KNF
1052
KNF
Secret Spring Mtn
1739
Klamath
POWERLINE
Shovel
Canyon
R. 3 W.
R. 2 W.
36
31
32
Gillis
Panther
Canyon
T. 48 N.
T. 47 N.
Bear Wallow Spring
KNF
R. 4 W.
R. 3 W.
5
1
6
Negro Creek
Canyon
Creek
R. 2 W.
R. 1 W.
KNF
1673
McGavin Peak
KNF
Lucky Spr
Spannus Spring
Grouse Spr
Bear

LEGEND

▨ Pokegama Wild Horse Management Area

▨ Grazing Allotments

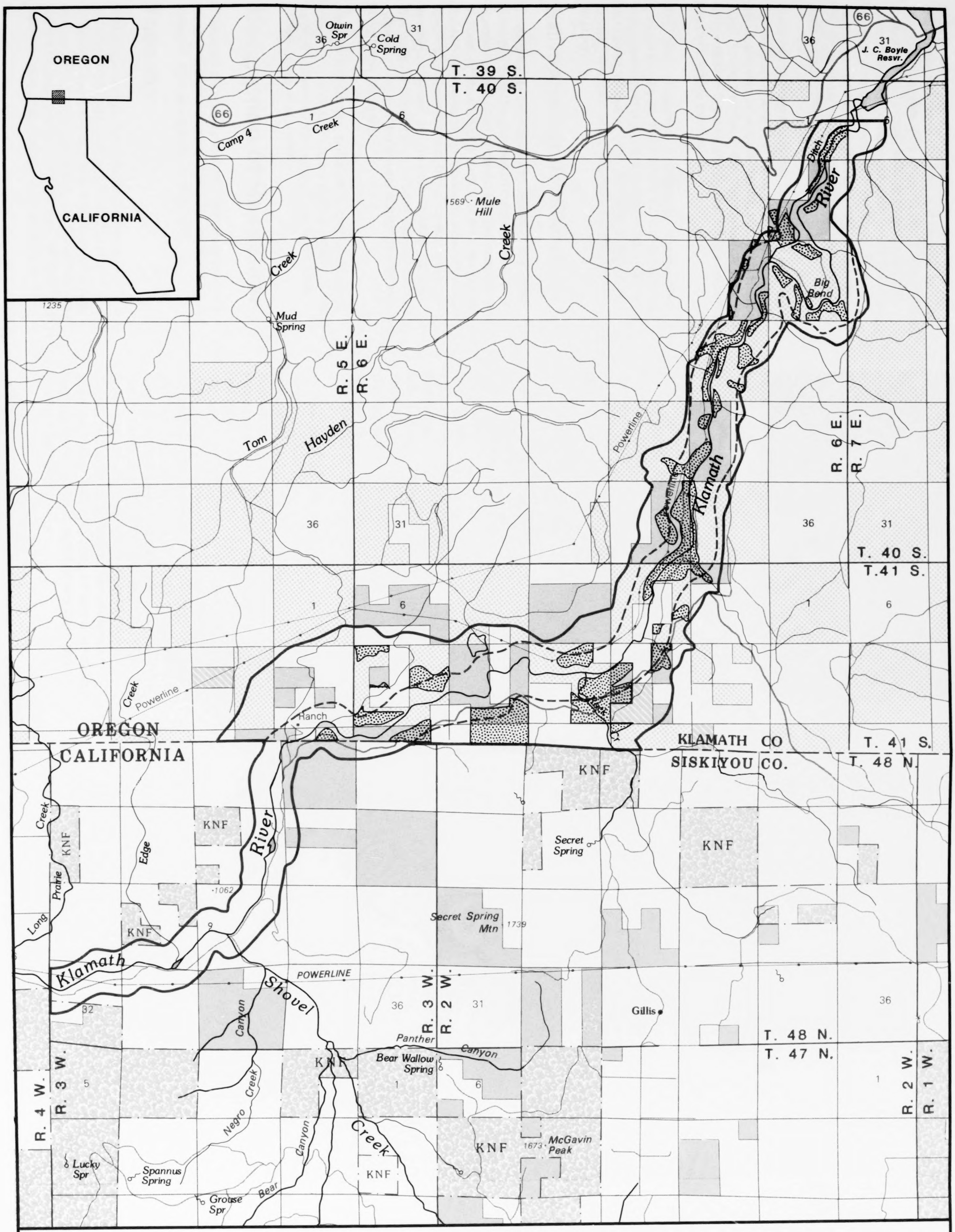
MAP 2-4

UPPER KLAMATH RIVER
GRAZING ALLOTMENTS AND WILD HORSE MANAGEMENT AREA

N

1989

1 0 1 2 3 Miles



OREGON
CALIFORNIA
Otwin Spr
Cold Spring
66
J. C. Boyle Resvr.
T. 39 S.
T. 40 S.
Camp 4
Creek
Ditch
River
Mule Hill
569
Creek
Big Bend
Mud Spring
R. 5 E.
R. 6 E.
Tom
Hayden
Powerline
Klamath
R. 6 E.
R. 7 E.
T. 40 S.
T. 41 S.
Ranch
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
Secret Spring Mtn
1739
River
Edge
Long Prairie
Creek
1062
Klamath
POWERLINE
Shovel
Canyon
Panther
Canyon
Bear Wallow Spring
R. 3 W.
R. 2 W.
Gillis
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
Negro Creek
Canyon
Creek
McGavin Peak
1673
Lucky Spr
Spannus Spring
Grouse Spr
Bear
R. 2 W.
R. 1 W.

▨ BLM Commercial Forest Lands

MAP 2-5

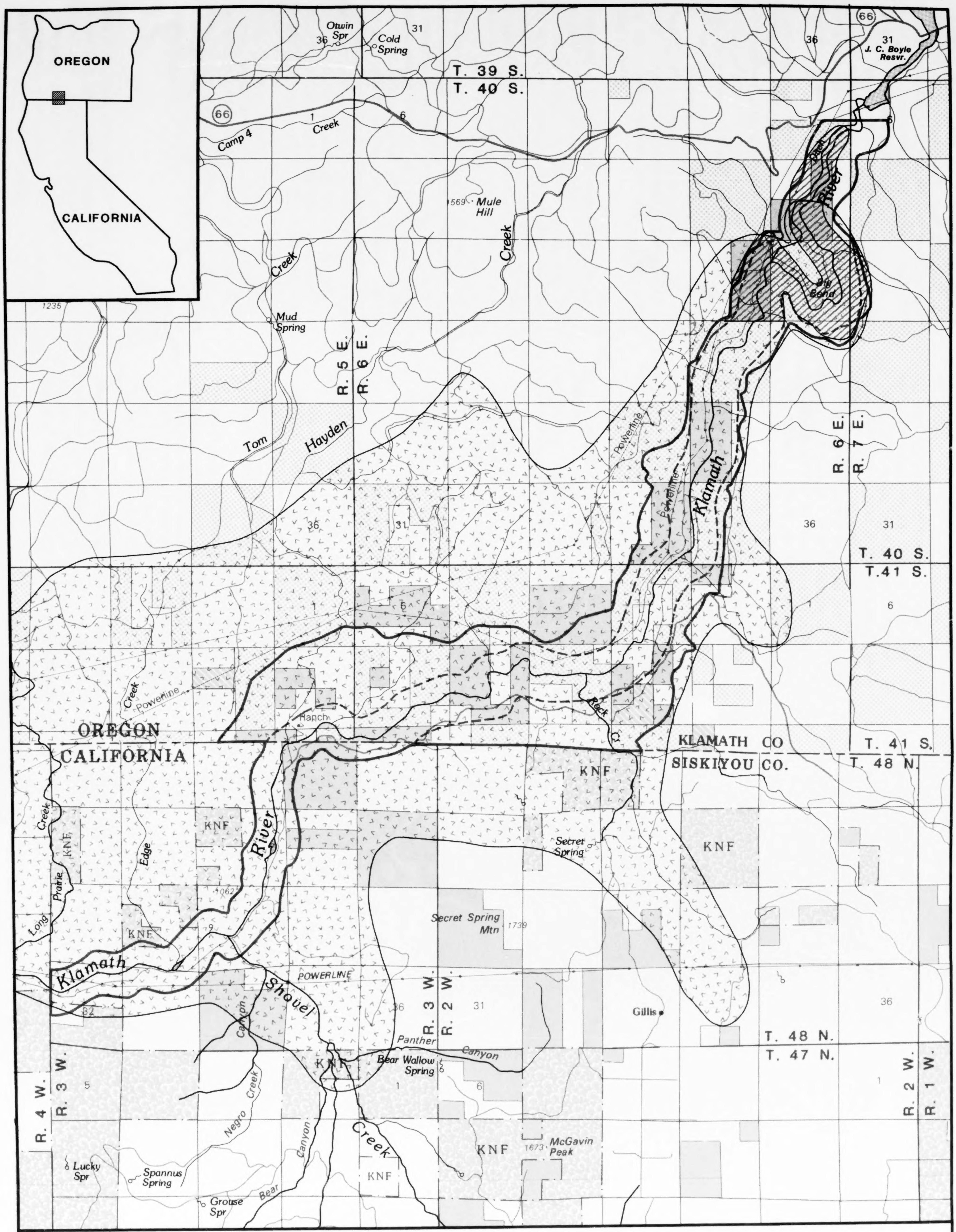
UPPER KLAMATH RIVER

N

COMMERCIAL FOREST LANDS

1989

1 0 1 2 3 Miles


OREGON
CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
66
Camp 4
Creek
J. C. Boyle Resvr.
1569 Mule Hill
Creek
Creek
Mud Spring
1235
R. 5 E.
R. 6 E.
Tom
Hayden
Powerline
Powerline
Klamath
River
Big Bend
R. 6 E.
R. 7 E.
T. 40 S.
T.41 S.
Creek
Powerline
Ranch
Rock Cr.
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Secret Spring
KNF
Creek
Long
Prairie
KNF
Edge
River
1062
KNF
Secret Spring Mtn
1739
Klamath
POWERLINE
Shovel
Canyon
Gillis
R. 3 W.
R. 2 W.
Panther
Canyon
Bear Wallow Spring
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
Negro
Creek
Canyon
Creek
KNF
1673 McGavin Peak
KNF
Lucky Spr
Spannus Spring
Grouse Spr
Bear

LEGEND

⁘	Critical Deer Winter Range
▨	BLM Designated Falcon Habitat

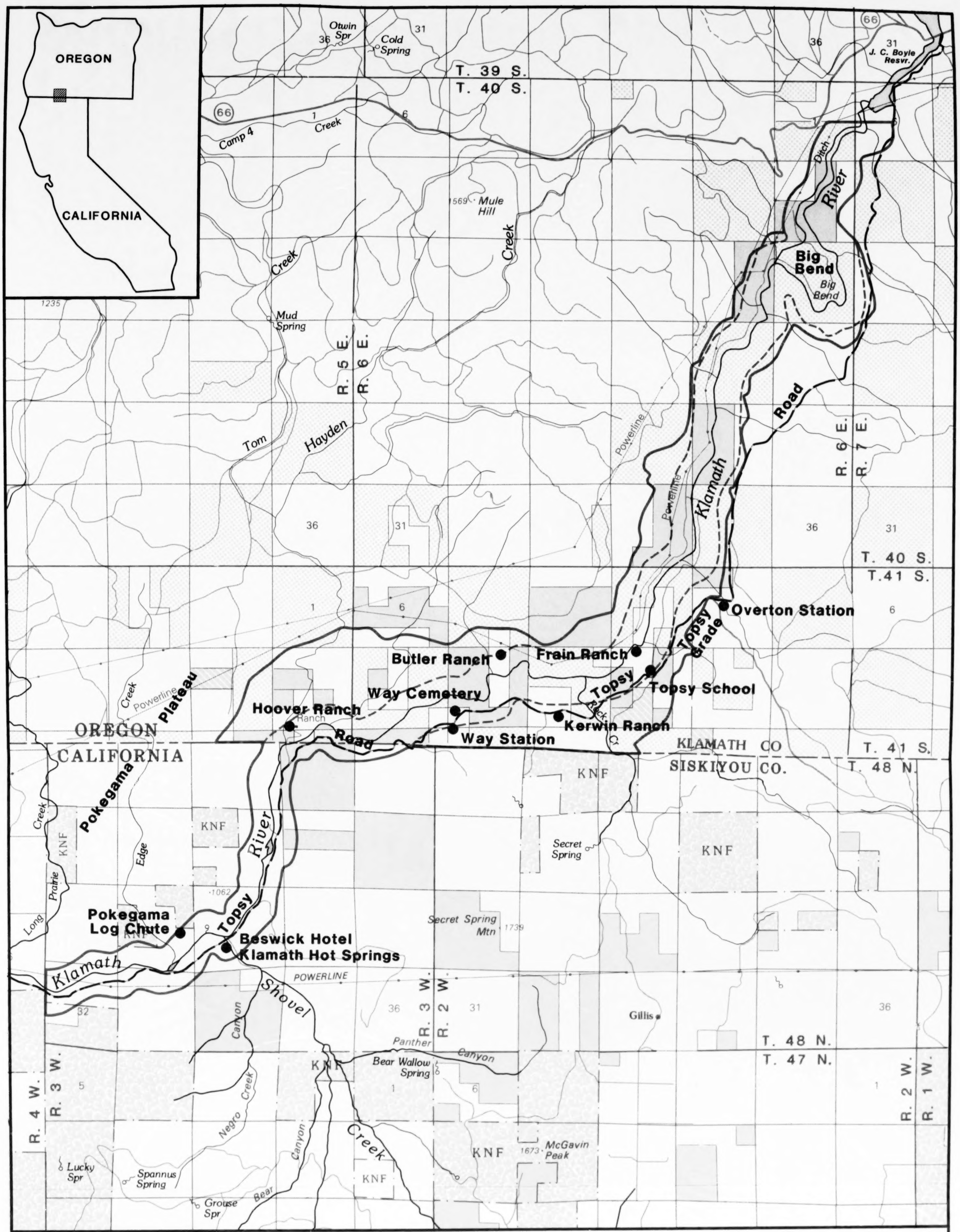
N

MAP 2-6

UPPER KLAMATH RIVER
CRITICAL DEER WINTER RANGE AND FALCON HABITAT

1989

1 0 1 2 3 Miles


OREGON
CALIFORNIA
Otwin Spr
Cold Spring
T. 39 S.
T. 40 S.
66
Camp 4
Creek
J. C. Boyle Resvr.
Ditch
River
1569 Mule Hill
Creek
Big Bend
Big Bend
Mud Spring
R. 5 E.
R. 6 E.
Tom
Hayden
Powerline
Klamath
Road
R. 6 E.
R. 7 E.
T. 40 S.
T.41 S.
Overton Station
Topsy Grade
Butler Ranch
Frain Ranch
Topsy
Topsy School
Way Cemetery
Hoover Ranch
Kerwin Ranch
Way Station
Road
Plateau
Powerline
OREGON
CALIFORNIA
KLAMATH CO
SISKIYOU CO.
T. 41 S.
T. 48 N.
KNF
Pokegama
Edge
River
Topsy
Secret Spring
Long Prairie
Creek
Pokegama Log Chute
Beswick Hotel
Klamath Hot Springs
Klamath
Secret Spring Mtn 1739
POWERLINE
Shovel
Canyon
R. 3 W.
R. 2 W.
Gillis
T. 48 N.
T. 47 N.
R. 4 W.
R. 3 W.
Panther Canyon
Bear Wallow Spring
Negro Creek
Canyon
Creek
1673 McGavin Peak
Lucky Spr
Spannus Spring
Grouse Spr
Bear
R. 2 W.
R. 1 W.

LEGEND

● Historic Sites

— — Topsy Road

MAP 2-7

UPPER KLAMATH RIVER

HISTORIC SITES

1989

1 0 1 2 3 Miles